DOCUMENT RESUME

ED 034 702 · 24 SE 007 855

AUTHOR	Alkin, Marvin C.; And Others
TITLE	Mathematics 4-6, Instructional Objectives Exchange.
INSTITUTION	California Univ., Los Angeles. Center for the Study of Evaluation.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO	BR-6-1646
NOTE	250p.
EDRS PRICE	EDRS Price MF-$1.00 HC-$12.60
DESCRIPTORS	Arithmetic, *Elementary School Mathematics, *Evaluation, Geometry, *Measurement Goals, *Objectives, *Test Construction

ABSTRACT

This collection contains 233 objectives and related evaluation items for mathematics--grades four to six. The following categories are included - (1) sets, (2) numbers, numerals, and numeration systems, (3) operations and their properties, (4) measurement, (5) geometry, (6) relations, functions and graphs, (7) probability and statistics, (8) applications and problem solving, and (9) mathematical sentences, order and logic. Each objective consists of four elements - (1) the objective, (2) measurement items, (3) means for judging the adequacy of student responses, and (4) an IOX rating. Each objective is stated in operational terms, and is identified by a Category and a Sub-Category, which serve to limit and define it. Finally, the majority of the objectives are accompanied by four sample items, each of which is designed to test the student's acquisition of the desired behavior. (RP)

ED034702

BR 6-16
PA-24
OE/BR

INSTRUCTIONAL OBJECTIVES EXCHANGE

Center for the Study of Evaluation

SE

MATHEMATICS, 4-6

SE 007 855

Marvin C. Alkin
Director

UCLA Graduate School of Education

The CENTER FOR THE STUDY OF EVALUATION (CSE) is one of nine centers for educational research and development, sponsored by the United States Department of Health, Education, and Welfare, Office of Education. Established at UCLA in June, 1966, CSE is devoted exclusively to finding new theories and methods of analyzing educational systems and programs and gauging their effects.

The Center serves its unique function with an interdisciplinary staff whose specialties combine for a broad, versatile approach to the complex problems of evaluation. Study projects are conducted in three major program areas: Evaluation of Instructional Programs, Evaluation of Educational Systems, and Evaluation Methodology and Services.

ED034702

INSTRUCTIONAL OBJECTIVES EXCHANGE

a project of

THE CENTER FOR THE STUDY OF EVALUATION

MATHEMATICS 4-6

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Guiding Committee

Marvin C. Alkin
Eva L. Baker
Madeline Hunter
Ronald G. McIntire
W. James Popham
Rodney W. Skager

INTRODUCTION

Objective Collections distributed by the Instructional Objectives Exchange (IOX) contain objectives and measurement items developed under the auspices of IOX. These objectives were based either upon curricular material submitted to the Exchange by teachers, schools, and school districts, or they were generated by the IOX staff.

Purpose

The staff of the Exchange believes that it will be easier for the busy teacher or administrator to select from among objectives, and to generate only a very few, than it would be for him to formulate an entire set of behavioral objectives and measurement items.

There is no attempt to dictate curriculum through this service. Rather, the goal of the Exchange is to expedite the user's selection of his own objectives.

The user may select from among these objectives those which are consistent with his own curricular goals, since, in many cases, there will be more objectives contained within each Collection than an individual teacher or district will wish to use in a particular instructional situation. In addition, he may generate objectives to fill gaps which he perceives to exist within the set of objectives as they have been developed.

Contents

Different Objective Collections will vary as to the number of measures which have been developed to assess the attainment of an objective. In some cases, there is a pool of items (usually six). In others, there is only one sample item per objective. In a very few cases, there are no items at all. Though it is the Exchange's intention to supply a pool of items with which to assess each objective, this goal has not yet been accomplished. As additional items are developed, however, their availability will be made known through the publication of IOX Catalogs.

Differences may be noted in the construction of "correct responses" to specific items developed to assess an objective. In some cases, the Exchange has provided "answers." These serve in instances where a single, correct answer is possible. For example, in mathematics items there often exists only one answer that can be considered correct.

In other cases, the Exchange has included as the "correct response" not a specific "answer," but what are called "criteria for judging the correctness of a response." In these instances, a particular behavior, or process, is being taught. As a group of students apply this process in response to an item, their answers may differ and still be considered correct. However, though there is no single correct response, this does not mean that *any response* is correct. For this reason, criteria are provided by means of which the acceptability of a learner's answer can be judged. The criteria are designed to exemplify the process called for in the objective. An example of this is found in the Collection of English literature objectives, wherein the process of evaluating the tone of a poem may permit different answers which can be judged in terms of both a demonstration of the process called for and internal evidence to be found in the poem itself.

As the Instructional Objectives Exchange continues to develop, it is anticipated that the user will be provided with classifications of objectives in each Collection. For example, many objectives can be classified as to whether they call for learner responses at a higher rather than lower cognitive level. Further, as users supply the Exchange with preference data, the degree of preference per objective reflected by various educational groups can be presented. These and other classification schemes will be forthcoming in future IOX publications.

Grade level recommendations for particular Collections have been supplied by contributors and should be ignored by users who consider other grade or age levels more appropriate for their own situation.

Quality Control

The objectives and items contained in this Collection have been adapted from curricular material contributed to the Exchange and, generally, have not been used in their present form in the classroom. The names of the contributors can be found on the acknowledgements page.

In the future, IOX anticipates that objectives and measures distributed will have been subjected to rigorous quality control procedures, such as the following: the material itself will be evaluated in the classroom; subject matter experts will examine the objectives and items in terms of whether given units include all essential or important aspects of the course under consideration; teachers will assess the unit objectives to determine whether they constitute goals feasible for groups of children in the classroom; teachers will report under what special conditions they believe the material can be most effective. Such information will be collated and made available to users. Furthermore, the objectives and measures will incorporate suggestions and improvements derived from their use.

Feedback

At the present time, however, the material is being distributed without these quality control procedures. The principal reason for this is the Exchange's desire to satisfy immediate needs of classroom teachers. Moreover, there is an additional advantage to this procedure. It will provide the Exchange with information about actual classroom use of this material. To this end, the pages immediately following the introductory material contain a questionnaire, designed to supply the Exchange with information related to the above control procedures. IOX would greatly appreciate your cooperation in this matter. *Please remove the questionnaire pages and return them after you have examined, or, preferably, actually used, the contents of this booklet.*

The Exchange solicits your patience as you examine these early materials so that the system can, in time, be updated and improved. This first effort, albeit primitive, starts the cycle toward a continually improving collection of instructional objectives which, hopefully, can be of considerable utility to the nation's educators.

The Mathematics Collection

This Collection contains 233 objectives and related evaluation items for math, grades four to six. It is organized into the following categories: sets; numbers, numerals and numeration systems; operations and their properties; measurement; geometry; relations, functions and graphs; probability and statistics; applications and problem solving; and mathematical sentences, order and logic. The objectives in each category are arranged, in terms of ascending grade level.

Each objective in the Collection contains four elements; (1) the objective, (2) measurement items, (3) means for judging the adequacy of student responses, and (4) an IOX rating.

The objective itself is stated in operational terms, and is identified by a Category and a Sub-Category, which serve to limit and define it. The behavioral aspect as well as the content of the objective have been carefully selected so that the student is required to master processes and concepts which are structural to the discipline of math. The total Collection requires the acquisition of a wide range of behaviors. A few objectives require no more from the student than that he be able to recall knowledge, while other objectives require the student to apply his knowledge, or to analyze or synthesize given problems.

The majority of the objectives are accompanied by four sample items, each of which is designed to test the student's acquisition of the desired behavior. In most cases, a correct answer to the problem has been provided. However, there are instances where a single correct answer is impossible to supply. In these cases, either sets of possible answers or suggested criteria for evaluating the student's answer have been provided.

All objectives included here have been rated by participants of the 1969 IOX Summer Institute for the Preparation of Instructional Objectives. Ratings ranging from 1 (acceptable) to 5 (unacceptable) were given according to whether the objective should be retained in the IOX *Collection*. Ratings should not be interpreted as an estimate of the worth of an objective. Objectives rated 4 or 5 were eliminated from the present *Collection*.

Acknowledgements

While the objectives and items contained in this *Collection* have been developed by the Staff of the Instructional Objectives Exchange, much of the material is based upon contributions made by the following school districts:

Clark County School District, Las Vegas, Nevada
Bucks County Public Schools, Doylestown, Pennsylvania
Department of Public Instruction, Harrisburg, Pennsylvania
Cajon Valley Union School District, El Cajon, California
Frederick County Public Schools, Frederick, Maryland
Winnetka Public Schools, Winnetka, Illinois
School City of Gary, Gary, Indiana

The following individuals added to, refined and rated the materials:

Brother Arthur Indelicato
De La Salle High School, Minneapolis, Minnesota

Mrs. Yuriko Abe
Los Angeles City Schools, California

Miss Chizuko Sakuma
Los Angeles City Schools, California

Miss Lois Barth
Long Beach Unified School District, California

Mrs. Sally Cardarelli
Liverpool, New York

Mr. Robert Geurts
Kentfield School District, California

Mrs. Phyllis Thom
Palos Verdes Unified School District, California

Mr. Paul V. Wilcox
Los Alamos Public Schools, New Mexico

The Instructional Objectives Exchange genuinely appreciates the significant contributions of these school districts and individuals.

To the User:

In order to improve the quality of our Collections of objectives and test items, we must have feedback from our users. We anticipate that our Collections will be used by both teachers and administrators, which means they will be utilized in various ways. However, some aspects of the objectives and related test items are important regardless of the user's intent, and we would like to evaluate this Collection with respect to those dimensions. With this in mind, we ask that you take a few minutes to complete and return the following questionnaire.

Part I of the questionnaire requests information which identifies the user's interest in the Collection. This is important and should be completed by everyone. Parts II and III relate to the objectives and test items, respectively, and should also be completed by all users. Part IV goes into greater detail than the preceding parts, and is optional.

We strongly urge that you look at the questionnaire *now* so that you may jot down pertinent comments while you are using the Collection. Then complete the questionnaire and return it as soon as possible after use of the Collection. Your cooperation in this matter is extremely valuable and is greatly appreciated.

INSTRUCTIONAL OBJECTIVES EXCHANGE USER QUESTIONNAIRE

Part I: USER information--Please complete the following:

1. Title and Number of Collection: ____________________
2. Name: ____________________ Position: ____________________
3. School: ____________________
4. School District: ____________________
5. City: ____________________ State ____________ Zip ____________
6. Grade level(s) of class(es) using the Collection: ____________________
7. Please check the ability level(s) of the class(es) using the Collection:

   ☐ below average ☐ average ☐ above average

Part II: INSTRUCTIONAL OBJECTIVES Information--Please check or fill in where appropriate:

1. a. Overall, to what extent are the objectives useful to you?

   ☐ not useful ☐ somewhat useful ☐ highly useful

   b. In what way? ____________________

   ____

2. a. Overall, to what extent are the objectives too specific or too general?

   ☐ too specific ☐ just about right ☐ too general

   b. Can you give examples (by objective number) of objectives which are:

   (1) too specific? ____________________

   (2) too general? ____________________

3. a. Overall, to what extent did your students find the objectives difficult?

   ☐ too easy ☐ just about right ☐ too difficult

   b. Can you give examples (by objective number) of objectives which are:

   (1) too easy? ____________________

   (2) too difficult? ____________________

(OVER)

Part III: TEST ITEM Information--Please check or fill in where appropriate:

1. a. Overall, to what extent do the test items measure the objectives?

   not well   somewhat   very well

   b. Can you give examples (by objective and item number) of test items which do not measure the objective?______________________________

2. a. Overall, did your students have difficulty reading test items?

   yes   no

   b. Can you give examples (by objective and item number) of items which are difficult to read?____

3. a. Overall, how helpful are the 'criteria' provided for evaluating answers to items?

   not helpful   somewhat helpful   very helpful

   b. Can you identify factors to make the criteria more useful?

   ____

   ____

   ____

4. Do you have any additional suggestions with respect to this particular Collection or the general operation of the Instructional Objectives Exchange?

On the following page you will find additional, more explicit questions. If you have time to answer them, your contribution to the improvement of IOX will be greatly increased.

Please mail the completed questionnaire and as much additional information as your time permits to:

QUESTIONNAIRE
INSTRUCTIONAL OBJECTIVES EXCHANGE
Center for the Study of Evaluation
UCLA Graduate School of Education
Los Angeles, California 90024

Part IV: ADDITIONAL Questionnaire Information

These questions require more time to answer than those on the previous page. They are extremely important, however, and any time you can spare to respond to them will be greatly appreciated. Please return this page with the completed questionnaire.

Thank you for your time and effort.

Name: ______________________________

School: ______________________________

1. Please list by objective number in the space below all the objectives you actually used.

____

____

____

____

____

____

2. Are there any objectives which should be deleted from the Collection? If so, please list them by objective number and state why they should be removed.

(OVER)

3. Please list by objective and item number any test items which do not accurately measure their objectives or which are otherwise in error. If possible, briefly describe the error.

4. Please describe any important objectives or concepts which do not appear in the Collection. Use an additional sheet of paper if necessary.

Please mail the completed questionnaire and as much additional information as your time permits to:

QUESTIONNAIRE
INSTRUCTIONAL OBJECTIVES EXCHANGE
Center for the Study of Evaluation
UCLA Graduate School of Education
Los Angeles, California 90024

Objective 1
IOX Acceptability Rating: 1

Math
Grade 4 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Naming a Set

OBJECTIVE: Given a set, the student will be able to describe the objects in the set.

SAMPLE ITEMS:

Describe the objects in the set. {X, Y, Z} Answer: Last three letters of the alphabet ITEM 1	Describe the objects in the set. {January, February, March, April, May} Answer: First five months of the year. ITEM 2
Describe the objects in the set. {Monday, Tuesday, Wednesday} Answer: First three days of the week. ITEM 3	Describe the objects in the set. {Breakfast, Lunch, Dinner} Answer: Meals of the day. ITEM 4

Objective 2 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Naming a Set

OBJECTIVE: Given a set, the student will name the set by listing its members.

SAMPLE ITEMS:

List the members in the set. {the numbers 1 to 5} Answer: {1, 2, 3, 4, 5} ITEM 1	List the members in the set. {the days of the week} Answer: {Monday, Tuesday, Wednesday, Thursday, Friday} ITEM 2
List the members in the set. {the colors of the U.S.A. flag} Answer: {red, white, blue} ITEM 3	List the members in the set. {the letters from a to g} Answer: {a, b, c, d, e, f, g} ITEM 4

Objective 3 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Cardinal Number of Sets

OBJECTIVE: Given a set, the student will identify the cardinal number of the set.

SAMPLE ITEM:

Name the cardinal number of the following set.

$A = \{a, b, c\}$

ANSWER

$n(A) = 3$

ITEM 1

Name the cardinal number of the following set.

$B = \{2, 3, 4, 5\}$

ANSWER:

$n(B) = 4$

ITEM 2

Name the cardinal number of the following set.

$C = \{\}$

ANSWER:

$n(C) = 0$

ITEM 3

Name the cardinal number of the following set.

D = {⬯, ◖, ▽, ◇, □}

ANSWER:

$n(D) = 5$

ITEM 4

Objective 4 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Empty Set

OBJECTIVE: Given a list of sets, the student will demonstrate his understanding of the empty set by circle all empty sets.

SAMPLE ITEMS:

Circle the empty sets.

A= {worms that Run}

B= {birds that fly}

C = {Rabbits that fly}

Answer: A, C

ITEM 1

Circle the empty set.

A={cows that hoP}

B={Rabbits that hoP}

Answer: A

ITEM 2

Circle the empty sets.

A = {25 th hour of day}

B = { }

C = {0}

Answer: A, B

ITEM 3

Circle the empty set.

A = {1,2,3}

B = { }

Answer: B

ITEM 4

Objective 5

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Subsets

OBJECTIVE: Given a set with no more than three elements, the student will write all the subsets for the given set.

SAMPLE ITEMS:

Write all the subsets for the given set.

{1, 2, 3}

ANSWER: {1}, {2}, {3}, {1, 2}, {1, 3}, {2, 3}, { }, {1, 2, 3}

ITEM 1

Write all the subsets for the given set.

{△, □, ○,}

ANSWER: {△}, {□}, {○} {△, □} {△, ○}, {□, ○} {△, □, ○}, { }

ITEM 2

Write all the subsets for the given set.

{A, ↑}

ANSWER: {A}, {↑} {A, ↑}, { }

ITEM 3

Write all the subsets for the given set.

{○}

ANSWER: {○}, { }

ITEM 4

Objective 6 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Subsets

OBJECTIVE: Given a group of sets, the student will demonstrate his understanding of subset concept by making a subset for each of the sets in the group.

SAMPLE ITEMS:

Make a subset for the set below. {Ford, Buick, Porche, Simca} ANSWER: {Ford} ITEM 1	Make a subset for the set below. {1, 2, 3, 4, 5, 6, 7, 8, 9} ANSWER {2, 4, 6, 8} ITEM 2
Make a subset for the set below. {children in your class} ANSWER: {girls in your class} ITEM 3	Make a subset for the set below. {cities in California} ANSWER. {Fresno, San Jose} ITEM 4

Objective 7

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Math

SUB-CATEGORY: Equal Sets

OBJECTIVE: Given a set, the student will construct a set equal to it.

SAMPLE ITEMS:

Write an equal set for the given set. {Mary, Sue, Beth} Possible ANSWER: {Sue, Beth, Mary} ITEM 1	Write an equal set for the given set. {hat, coat, tie} Possible ANSWER: {coat, tie, hat} ITEM 2
Write an equal set for the given set. {four, nine, six, three} Possible ANSWER: {nine, four, six, three} ITEM 3	Write an equal set for the given set. {243, 106, 196} Possible ANSWER: {106, 243, 196} ITEM 4

Objective 8

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Equivalent Sets

OBJECTIVE: Given a group of pairs of sets, the student will circle the pairs of equivalent sets.

SAMPLE ITEMS:

Circle the pair of equivalent sets.

A. {◊ , ◐}, {▽. ◇}

B. {⬠} {✚, ○, ○}

Answer: A

ITEM 1

Circle the pair of equivalent sets.

C. {□ , □}, {○, ○, ○}

D. {□, □, □}, {○, ○, ○}

Answer D

ITEM 2

Circle the pair of equivalent sets.

A. {◊}, {◊}

B. {◇}, {□, ⬭}

Answer: A

ITEM 3

Circle the pair of equivalent sets.

C. {□, ◇}, {▽, ▽, ○, ○}

D. {□, ◇, ▽, ▽}, {□, ◊, △, D}

Answer: D

ITEM 4

Objective 9

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: One-to-One Correspondence

OBJECTIVE: Given a group of pairs of sets, the student will pick out the pairs which have a one-to-one correspondence.

SAMPLE ITEMS:

Pick out the pair of sets which have a one-to-one correspondence.

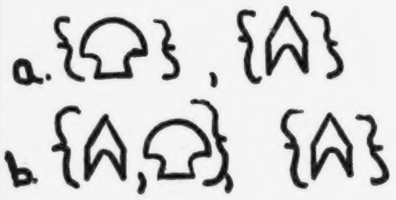
a. {○,○}, {□,□}

b. {○}, {□,□}

ANSWER: a

ITEM 1

Pick out the pair of sets which have a one-to-one correspondence.



ANSWER: a

ITEM 2

Pick out the pair of sets which have a one-to-one correspondence.

a. {○,○,○,○,○}, {◊,◊,◊}

b. {○,○,○,○}, {□,□,□,□}

ANSWER: b

ITEM 3

Pick out the pair of sets which have a one-to-one correspondence.

a. {○, ○, ○, ∘, ∘}, {▿,▿,▿}

b. {○, ○, ○, ∘, ∘}, {|, |, |, |, |}

ANSWER: b.

ITEM 4

Objective 10 Math

IOX Acceptability Rating: 1 Grade 4 - 6

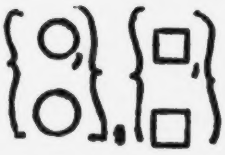
MAJOR CATEGORY: Sets

SUB-CATEGORY: Equivalent Sets
One-to-One Correspondence

OBJECTIVE: Given a pair of sets, the student will identify the sets as being equivalent or non-equivalent and if equivalent, demonstrate a one-to-one correspondence between the two sets.

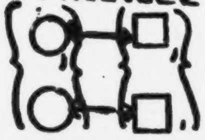
SAMPLE ITEMS:

Label the following pair of sets E for equivalent or NE for non-equivalent. If equivalent, use arrows to show a one-to-one correspondence.



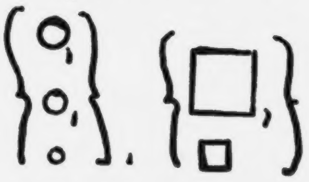
ANSWER:

E



ITEM 1

Label the following pair of sets E for equivalent or NE for non-equivalent. If equivalent, use arrows to show a one-to-one correspondence.

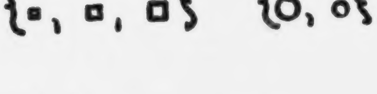


ANSWER:

NE

ITEM 2

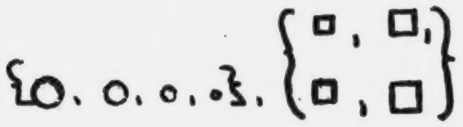
Label the following pair of sets E for equivalent or NE for non-equivalent. If equivalent, use arrows to show a one-to-one correspondence.



ANSWER: NE

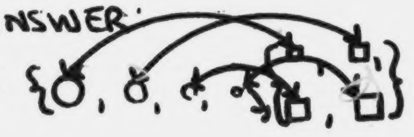
ITEM 3

Label the following pair of sets E for equivalent or NE for non-equivalent. If equivalent, use arrows to show a one-to-one correspondence.



ANSWER:

E



ITEM 4

Objective 11

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Sets

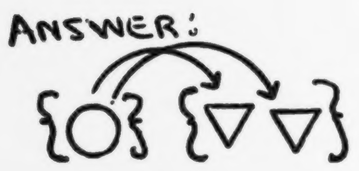
SUB-CATEGORY: One-to-Many

OBJECTIVE: Given a pair of sets, the student will match one element of the first set to a specified number of elements in the second set to show a one-to-many correspondence.

SAMPLE ITEMS:

Match with lines each member in set A with two members in set B to show a one-to-many correspondence.

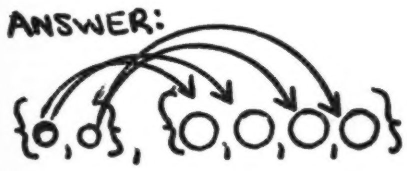
$\{\bigcirc\}\ \{\nabla,\nabla\}$



ITEM 1

Match with lines each member in Set A with two members in set B to show a one-to-many correspondence.

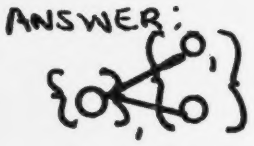
$\{\circ,\circ\},\{\bigcirc,\bigcirc,\bigcirc,\bigcirc\}$



ITEM 2

Match with lines each member in set A with two members in set B to show a one-to-many correspondence.

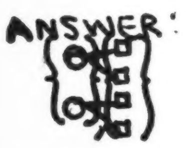
$\{\circ\}\ \left\{\begin{matrix}\circ,\\ \circ\end{matrix}\right\}$



ITEM 3

Match with lines each member in Set A with two members in set B to show a one-to-many correspondence.

$\left\{\begin{matrix}\circ,\\ \circ\end{matrix}\right\},\left\{\begin{matrix}\square\\ \square\\ \square\\ \square\end{matrix}\right\}$



ITEM 4

Objective 12 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Intersection of two sets

OBJECTIVE: Given pairs of sets, the student will name the intersection of each pair of sets.

SAMPLE ITEMS:

Name the intersection of the pair of sets.

$A = \{\text{Tom, Joe, Pete, Larry}\}$

$B = \{\text{Joe, Phil, Jerry}\}$

ANSWER:

$A \cap B = \{\text{Joe}\}$

ITEM 1

Name the intersection of the pair of sets.

$C = \{\text{hat, coat, shoe}\}$

$D = \{\text{sock, skirt coat}\}$

ANSWER:

$C \cap D = \{\text{coat}\}$

ITEM 2

Name the intersection of the pair of sets.

$A = \{\text{BREAKfast, Lunch}\}$

$B = \{\text{Lunch, DINNER}\}$

ANSWER:

$A \cap B = \{\text{LUNCH}\}$

ITEM 3

Name the intersection of the pair of sets.

$C = \{\text{SUN, MOON, STARS}\}$

$D = \{\text{plANET, MOON, STARS}\}$

ANSWER:

$C \cap D = \{\text{MOON, STARS}\}$

ITEM 4

Objective 13 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Disjoint Sets

OBJECTIVE: Given a disjoint pair of sets, the student will identify the intersection of the given pair of sets as the empty set.

SAMPLE ITEMS:

Name the intersection of the pair of sets.

A = {Mary, John, Peter}
B = {Lois, Kathy, Karen}

ANSWER:
$A \cap B = \{\}$

ITEM 1

Name the intersection of the pair of sets.

C = {1, 6, 3, 4}
D = {5, 9, 8, 7}

ANSWER:
$C \cap D = \{\}$

ITEM 2

Name the intersection of the pair of sets.

A. {□, □, ▫}
B. {○, ○, ∘}

ANSWER:
$A \cap B = \{\}$

ITEM 3

Name the intersection of the pair of sets.

C. = {◇, ◇, ◇, ◇}
D. = {△, △, ▽, ▽}

ANSWER: { }

ITEM 4

Objective 14

IOX Acceptability Rating: 1

Math

Grade 4- 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Universal Set

OBJECTIVE: Given a group of sets, the student will name a universal set for each one.

SAMPLE ITEMS:

Name a universal set for the set below. {The set of students in California} Possible Answer: {The set of students in the United States} ITEM 1	Name a universal set for the set below. {The set of Chevrolet cars} Possible Answer: {The set of American cars} ITEM 2
Name a universal set for the set below. {The set of books in the library about Mathematics} Possible Answer: {The total set of books in the library} ITEM 3	Name a universal set for the set below. {The set of records in Motown} Possible Answer: {The set of records in Michigan} ITEM 4

Objective 15
IOX Acceptability Rating: 1

Math
Grade 4 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Union of Sets

OBJECTIVE: Given two sets, the student will find the union of each pair of sets.

SAMPLE ITEMS:

Join the set on the left with the set on the right.

$A = \{1, 2, 3, 4\}$; $B = \{6, 5, 7, 8\}$

ANSWER:

$\{1, 2, 3, 4, 5, 6, 7, 8\}$

ITEM 1

Join the set on the left with the set on the right.

$A = \{a, b, d, f\}$; $B = \{b, e, g\}$

ANSWER:

$\{a, b, c, d, e, f, g\}$

ITEM 2

Join the set on the left with the set on the right.

$V = \{\star, \Delta, \square\}$; $T = \{\square, \bigcirc, \star\}$

ANSWER:

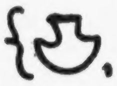
$\{\star, \Delta, \square, \bigcirc\}$

ITEM 3

Join the set on the left with the set on the right.

{ } ; {□, □, □}

ANSWER:

{, □, □, □}

ITEM 4

Objective 16 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Union and Intersection; Symbols $\cup$ and $\cap$

OBJECTIVE: Given a pair of sets, the student will form the union and the intersection.

SAMPLE ITEMS:

Find the union and intersection for the following pair of sets.

$A = \{1, 2, 3\}$

$B = \{2, 3, 4\}$

ANSWER:

$A \cup B = \{1, 2, 3, 4\}$

$A \cap B = \{2, 3\}$

ITEM 1

Find the union and intersection for the following pair of sets.

$C = \{1, 4, 7\}$

$D = \{2, 4, 12\}$

ANSWER:

$C \cup D \{1, 2, 4, 7, 12\}$

$C \cap D \{4\}$

ITEM 2

Find the union and intersection for the following pair of sets.

$X = \{$○, □, △$\}$

$Y = \{1, 2, 3\}$

ANSWER:

$X \cup Y = \{$○, □, △, $1, 2, 3\}$

$X \cap Y = \{\}$ or $\emptyset$

ITEM 3

Find the union and intersection for the following pair of sets.

$M = \{A, B, C\}$

$N = \{D, C, B\}$

$M \cup N = \{A, B, C, D\}$

$M \cap N \{C\}$

ITEM 4

Objective 17

IOX Acceptability Rating: 1

Math

Grade 5 - 6

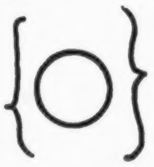
MAJOR CATEGORY: Sets

SUB-CATEGORY: Equal Sets

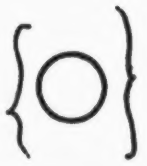
OBJECTIVE: Given any set, the student will construct an equal set.

SAMPLE ITEMS:

Construct an equal set for the given set.

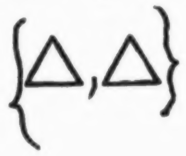


ANSWER:

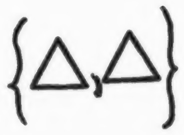


ITEM 1

Construct an equal set for the given set.

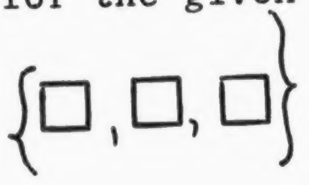


ANSWER:

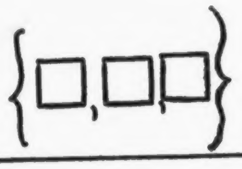


ITEM 2

Construct an equal set for the given set.

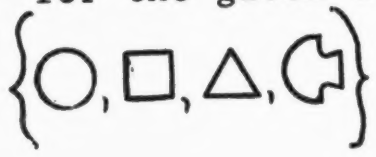


ANSWER:

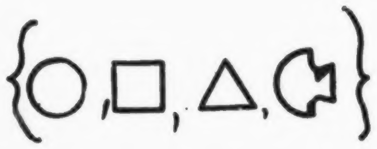


ITEM 3

Construct an equal set for the given set.



ANSWER:



ITEM 4

Objective 18

IOX Acceptability Rating: 1

Math

Grade 5 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Equivalent Sets

OBJECTIVE: Given any set, the student will construct an equivalent set.

SAMPLE ITEMS:

Construct for each set an equivalent set.

$\{\square, \bigcirc, \ast\}$

ANSWER:

$\{7, 8, 9\}$

ITEM 1

Construct for each set an equivalent set.

{Maria, Helen, Juan, Robert, Jane}

ANSWER:

$\{a, b, c, d, e\}$

ITEM 2

Construct for each set an equivalent set.

$\{4, 9\}$

ANSWER:

$\{\triangle, \bigcirc\}$

ITEM 3

Construct for each set an equivalent set.

$\{1, 2, 3, 4, 5, 6\}$

ANSWER:

$\{2, 4, 6, 8, 10, 12\}$

ITEM 4

Objective 19

IOX Acceptability Rating: 1

Math

Grade 5 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Finite, Infinite or Empty Sets

OBJECTIVE: Given a set, the student will classify it as Finite or Infinite.

SAMPLE ITEMS:

Classify as finite or infinite. $\{1, 2, 3, \ldots\}$ ANSWER: Infinite ITEM 1	Classify as finite or infinite. {WHOLE NUMBERS} ANSWER: INFINITE ITEM 2
Classify as finite or infinite. $\{1\}$ ANSWER: Finite ITEM 3	Classify as finite or infinite. {1 Billion} ANSWER: Finite ITEM 4

Objective 20

IOX Acceptability Rating: 1

Math

Grade 5 - 6

MAJOR CATEGORY: Sets

SUB-CATEGORY: Cross Products

OBJECTIVE: Given two sets, the student will write out the cross product and state the number of elements in the cross product.

SAMPLE ITEMS:

For the following two sets, write out the cross product and state the number of elements in the cross product.

$A = \{1,2,3\}$
$B = \{4,5\}$

ANSWER: $A \times B = \{(1,4), (1,5), (2,4), (2,5), (3,4), (3,5)\}$
$n\{A \times B\} = 6$

ITEM 1

For the following two sets, write out the cross product and state the number of elements in the cross product.

$A = \{1,2,3\}$
$B = \{4\}$

ANSWER: $A \times B = \{(1,4), (2,4), (3,4)\}$
$n\{A \times B\} = 3$

ITEM 2

Objective 21 Math

IOX Acceptability Rating: 1 Grade 5 - 6

MAJOR CATEGORY: Sets

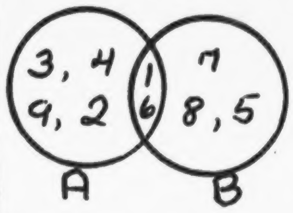
SUB-CATEGORY: Interpreting Venn Diagrams

OBJECTIVE: Given a pair of Venn diagrams, the student will describe the relation between the two illustrated sets using $\cap$, $\cup$, $>$, $<$, $\{\}$, $\otimes$.

SAMPLE ITEMS:

Using the given Venn diagram and the symbols:

Write a statement about the pair of sets.


3, 4
9, 2
1
6
7
8, 5
A
B

ANSWER:

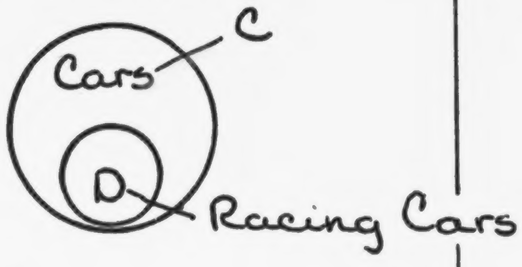
$A \cup B$ $\{1, 2, 3, 4, 5, 6, 7, 8, 9\}$

$A \cap B$ $\{1, 6\}$

ITEM 1

Using the given Venn diagram and the symbols:

Write a statement about the pair of sets.


C
Cars
D
Racing Cars

ANSWER:

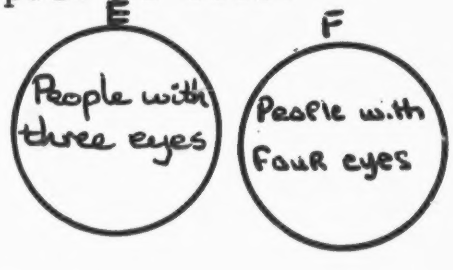
$D < C$

$C > D$

ITEM 2

Using the given Venn diagram and the symbols:

Write a statement about the pair of sets.


E
F
People with three eyes
People with four eyes

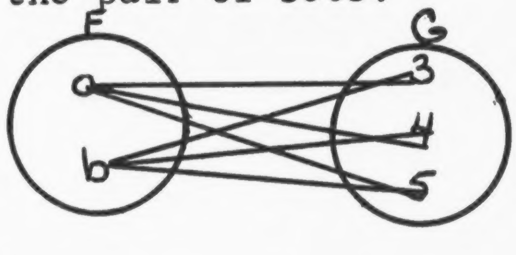
ANSWER:

$\{\}$ or $\emptyset$

ITEM 3

Using the given Venn diagram and the symbols:

Write a statement about the pair of sets.



ANSWER:

$F \otimes G = \left\{ \begin{matrix} (a,3), (a,4), (a,5), \\ (b,3), (b,4), (b,5) \end{matrix} \right\}$

ITEM 4

Math

Grade 4-6

Objective 22

IOX Acceptability Rating: 1

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Cardinal Numbers, 0-10,000

OBJECTIVE: Given a set of elements the student will write the cardinal number which designates the set.

SAMPLE ITEMS:

How many in this set?

{◇, ◖, ⬯}

Answer: 3

ITEM 1

How many in this set?

{⬭, ◇, ⬯, ◖, ▽, ◇}

Answer: 6

ITEM 2

How many in this set?

{⬯, △, ⬯, □, ◖, ○, ▽, ○, △}

Answer: 9

ITEM 3

How many in this set?

{⬭, □, ◇, △, ⬯, ○, ◖, ⬠, ▽, ○, ◇, △}

Answer: 12

ITEM 4

Objective 23

IOX Acceptability Rating: 1

Math

Grade 4-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Cardinal Numbers: Order Relations

OBJECTIVE: Given a set of whole numbers of 2, 3, or 4 digits, the student will write them in order from the least to the greatest.

SAMPLE ITEM: Write the following numbers in order from smallest to largest. 500, 60, 332 Answer: 60, 332, 500 ITEM 1	Write the following numbers in order from smallest to largest. 10, 25, 60, 3 Answer: 3, 10, 25, 60 ITEM 2
Write the following numbers in order from smallest to largest. 6348, 5421, 6684, 99 Answer: 99, 5421, 6348, 6684 ITEM 3	Write the following numbers in order from smallest to largest. 238, 22, 45, 268 Answer: 22, 238, 45, 268 ITEM 4

Math

Objective 24

Grade 4-6

IOX Acceptability Rating: 1

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Ordinal Numbers--First Through Thirty-first

OBJECTIVE: Given a series of cardinal numbers, the student will write an ordinal number for each one.

SAMPLE ITEMS:

Write an ordinal number for each cardinal number.

1, 2, 3

Answer: first, second, third

ITEM 1

Write an ordinal number for each cardinal number.

4, 5, 6

Answer: fourth, fifth, sixth

ITEM 2

Write an ordinal number for each cardinal number.

7, 8, 9

Answer: seventh, eighth, ninth

ITEM 3

Write an ordinal number for each cardinal number.

10, 20, 30,

Answer: tenth, twentieth, thirtieth

ITEM 4

Objective 25 Math

IOX Acceptability Rating: 1 Grade 4-6

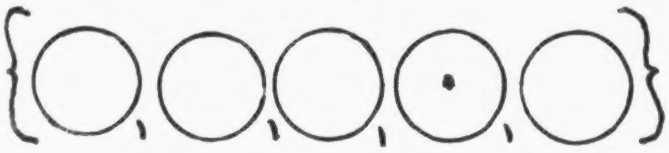
MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Fractions: Comparing Subsets with Sets

OBJECTIVE: Given a pictorial set of two types of elements, the student will name the fractional numbers which compare the number of one type of object with the total number of objects.

SAMPLE ITEMS:

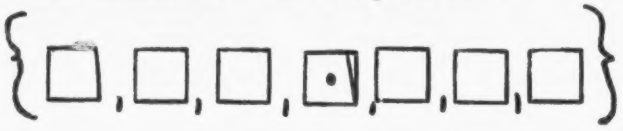
For the following set, name the fractional number which compares the number of objects with dots in them with the total number of objects.



Answer: $\frac{1}{5}$

ITEM 1

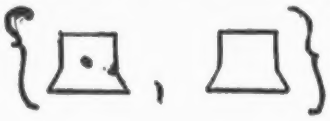
For the following set, name the fractional number which compares the number of objects with dots in them with the total number of objects.



Answer: $\frac{1}{7}$

ITEM 2

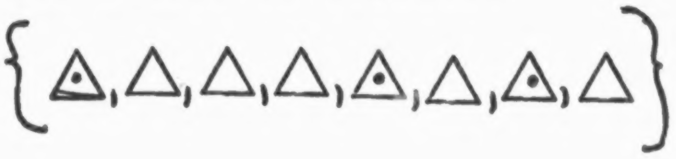
For the following set, name the fractional number which compares the number of objects with dots in them with the total number of objects.



Answer: $\frac{1}{2}$

ITEM 3

For the following set, name the fractional number which compares the number of objects with dots in them with the total number of objects.



Answer: $\frac{3}{8}$

ITEM 4

Objective 26

Math

IOX Acceptability Rating: 1

Grade 4-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Counting by 2's, 5's, 10's

OBJECTIVE: Given a group of spaces, the student will write a series of numbers with intervals of 2's, 5's, or 10's.

SAMPLE ITEMS:

Complete the following series:

10, __, __, __, __, 60

Answer: 20, 30, 40, 50

ITEM 1

Complete the following series:

2, __, __, __, __, 12

Answer: 4, 6, 8, 10,

ITEM 2

Complete the following series:

5, __, __, __, __, __, __, 40

Answer: 10, 15, 20, 25, 30, 35

ITEM 3

Complete the following series:

70, __, __, __, __, __, 130

Answer: 80, 90, 100, 110, 120

ITEM 4

Objective 27 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Multiples

OBJECTIVE: Given an incomplete sequence of multiples, the student will supply the missing ones.

SAMPLE ITEMS:

Supply the missing multiples.

0, 3, 6, 9, 12, x, y, z, 24

Answer: x=15
y=18
z=21

ITEM 1

Supply the missing multiples.

0, 7, 14, 21, a, b, c, 49, d

Answer: a=28
b=35
c=42
d=56

ITEM 2

Supply the missing multiples.

0, 4, 8, 12, x, y, 24, 28, z

Answer: x=16
y=20
z=32

ITEM 3

Supply the missing multiples.

0, 8, w, x, y, 40, 48, z

Answer: w=16
x=24
y=32
z=56

ITEM 4

Objective 28 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Common Multiples

OBJECTIVE: Given a pair of numbers, the student will name the common multiples.

SAMPLE ITEMS:

Name the numbers less than 31 that are common multiples of 3 and 5.

Answer: 15, 30

ITEM 1

Name the numbers less than 41 that are common multiples of 4 and 8.

Answer: 8, 16, 24, 32, 40

ITEM 2

Name the numbers less than 43 that are common multiples of 2 and 7.

Answer: 14, 28, 42

ITEM 3

Name the numbers less than 61 that are common multiples of 5 and 6.

Answer: 30, 60

ITEM 4

Objective 29

IOX Acceptability Rating: 1

Math

Grade 4-6

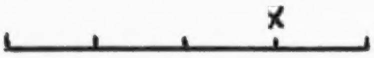
MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Fractions: Regions and the Number Line

OBJECTIVE: Given a number line, with a point marked off, the student will write a fraction for the point describing what part of the number line the point is.

SAMPLE ITEMS:

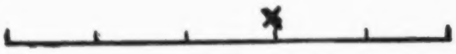
Write a fraction for the labeled point.



Answer: $\frac{3}{4}$

ITEM 1

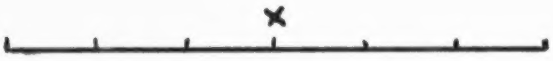
Write a fraction for the labeled point.



Answer: $\frac{3}{5}$

ITEM 2

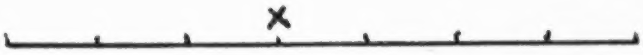
Write a fraction for the labeled point.



Answer: $\frac{3}{6}$

ITEM 3

Write a fraction for the labeled point.



Answer: $\frac{3}{7}$

ITEM 4

Objective 30

IOX Acceptability Rating: 1

Math

Grade 4-6

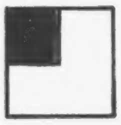
MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Fractional Numbers

OBJECTIVE: Given a model representing a fraction, the student will express the model in fractional form.

SAMPLE ITEMS:

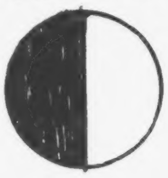
Express the shaded area in fractional form.



Answer: $\frac{1}{4}$

ITEM 1

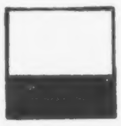
Express the shaded area in fractional form.



Answer: $\frac{1}{2}$

ITEM 2

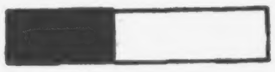
Express the shaded area in fractional form.



Answer: $\frac{1}{3}$

ITEM 3

Express the shaded area in fractional form.



Answer: $\frac{2}{5}$

ITEM 4

Objective 31 | Math

IOX Acceptability Rating: 1 | Grade 4-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Sets of factors

OBJECTIVE: Given a group of numbers, the student will name their sets of factors.

SAMPLE ITEMS:

Name the set of factors of 14.

1, ___, ___, 14

Answer: 1, 2, 7, 14

ITEM 1

Name the set of factors of 18.

1, ___, ___, ___, ___, 18

Answer: 1, 2, 3, 6, 9,

ITEM 2

Name the set of factors of 15.

1, ___, ___, 15

Answer: 1, 3, 5, 15

ITEM 3

Name the set of factors of 30.

1, ___, ___, ___, ___, ___,
___, 30

Answer: 1, 2, 3, 5, 6, 10, 15, 30

ITEM 4

Objective 32

IOX Acceptability Rating: 1

Math

Grade 4-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Common Factors

OBJECTIVE: Given a group of number pairs, the student will name their common factors.

SAMPLE ITEMS:

Name the common factors of 25 and 40.

Answer: 1, 5

ITEM 1

Name the common factors of 16 and 20.

Answer: 1, 2, 4

ITEM 2

Name the common factors of 18 and 24.

Answer: 1, 2, 3, 6,

ITEM 3

Name the common factors of 21 and 42.

Answer: 1, 3, 7, 21

ITEM 4

Objective 33

IOX Acceptability Rating: 1

Math

Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Cardinal Numbers

OBJECTIVE: Given a series of ordinal numbers, the student will write a cardinal number for each one.

SAMPLE ITEMS:

Write a cardinal number for each ordinal number.

first, second, third

Answer: 1, 2, 3

ITEM 1

Write a cardinal number for each ordinal number.

fourth, fifth, sixth

Answer: 4, 5, 6

ITEM 2

Write a cardinal number for each ordinal number.

seventh, eighth, ninth

Answer: 7, 8, 9,

ITEM 3

Write a cardinal number for each ordinal number.

tenth, twentieth, thirtieth

Answer: 10, 20, 30

ITEM 4

Objective 34 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Odd and Even Numbers

OBJECTIVE: Given a whole number, the student will state whether it is an odd or even number.

SAMPLE ITEMS:

Identify this number as odd or even.

43

Answer: odd

ITEM 1

Identify this number as odd or even.

601

Answer: odd

ITEM 2

Identify this number as odd or even.

300

Answer: even

ITEM 3

Identify this number as odd or even.

18

Answer: even

ITEM 4

Objective 35

Math

IOX Acceptability Rating: 1

Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Names for Numbers

OBJECTIVE: Given one of the digits from the base 10 numeral system, the student will write different names for that number.

SAMPLE ITEMS:

Write three different names for this number.

4

Answer: 1+3, 8÷2, 2^2

ITEM 1

Write three different names for this number.

7

Answer: VII, 49÷7, 14÷2

ITEM 2

Write three different names for this number.

12

Answer: 4x3, 6x2, XII

ITEM 3

Write three different names for this number.

5

Answer: 3+2, V, $\frac{10}{2}$

ITEM 4

Objective 36 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Roman Numerals

OBJECTIVE: Given a Roman Numeral, the student will write it as an Hindu-Arabic Numeral

SAMPLE ITEMS:

Write an Arabic Numeral for:

XIV

Answer: 14

ITEM 1

Write an Arabic Numeral for:

CIX

Answer: 109

ITEM 2

Write an Arabic Numeral for:

XXIV

Answer: 24

ITEM 3

Write an Arabic Numeral for:

DCC

Answer: 700

ITEM 4

Objective 37 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Number, Numerals, Numeration Systems

SUB-CATEGORY: Signed Whole Numbers

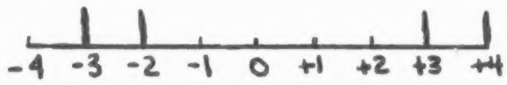
OBJECTIVE: Given a set of positive and negative numbers in which zero may be included, the student will graph them on a number line.

SAMPLE ITEMS:

Graph on a number line:

+3, -3, +4, -2

Answer:

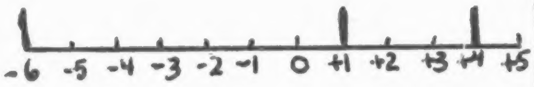


ITEM 1

Graph on a number line:

+4, -6, +1

Answer:

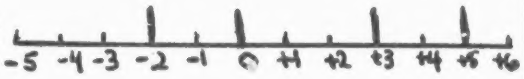

-6
-5
-4
-3
-2
-1
0
+1
+2
+3
+4
+5

ITEM 2

Graph on a number line:

-2, +5, 0, +3

Answer:

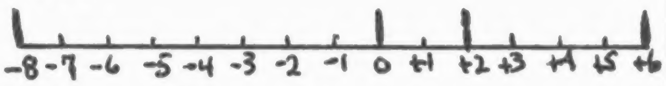

-5
-4
-3
-2
-1
0
+1
+2
+3
+4
+5
+6

ITEM 3

Graph on a number line:

-8, +6, +2, 0

Answer:


-8
-7
-6
-5
-4
-3
-2
-1
0
+1
+2
+3
+4
+5
+6

ITEM 4

Objective 38

IOX Acceptability Rating: 1

Math

Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Order Relations

OBJECTIVE: Given a set of rational numbers, the student will arrange them in order from least to greatest and vice versa.

SAMPLE ITEMS:

Arrange in order from least to greatest.

$\frac{1}{8}, .70, \frac{2}{3}, \frac{1}{4}$

Answer: $\frac{1}{8}, \frac{1}{4}, \frac{2}{3}, .70$

ITEM 1

Arrange in order from least to greatest.

$\frac{5}{8}, .68, \frac{1}{7}$

Answer: $\frac{1}{7}, \frac{5}{8}, .68$

ITEM 2

Arrange in order from greatest to least.

$\frac{9}{10}, .25, \frac{3}{5}, \frac{2}{3}$

Answer: $\frac{9}{10}, \frac{2}{3}, \frac{3}{5}, .25$

ITEM 3

Arrange in order from greatest to least.

$\frac{3}{4}, .02, \frac{1}{20}, \frac{1}{16}$

Answer: $\frac{3}{4}, \frac{1}{16}, \frac{1}{20}, .02$

ITEM 4

Objective 39
Math

IOX Acceptability Rating: 1
Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Rounding Off

OBJECTIVE: Given a decimal numeral, the student will round it off to the nearest indicated place.

SAMPLE ITEMS:

Round off to the nearest hundredth.

3.627

Answer: 3.63

ITEM 1

Round off to the nearest tenth.

3.429

Answer: 3.4

ITEM 2

Round off to the nearest hundred.

6275

Answer: 6300

ITEM 3

Round off to the nearest ten.

584

Answer: 580

ITEM 4

Objective 40

IOX Acceptability Rating: 1

Math

Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Renaming Fractions to Lowest Terms

OBJECTIVE: Given a fraction which is not in lowest terms, the student will reduce it to lowest terms.

SAMPLE ITEMS:

Reduce to lowest terms:

$\frac{6}{8}$

Answer: $\frac{3}{4}$

ITEM 1

Reduce to lowest terms:

$\frac{20}{30}$

Answer: $\frac{2}{3}$

ITEM 2

Reduce to lowest terms:

$\frac{5}{25}$

Answer: $\frac{1}{5}$

ITEM 3

Reduce to lowest terms:

$\frac{32}{64}$

Answer: $\frac{1}{2}$

ITEM 4

Objective 41 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Equivalent Fractions

OBJECTIVE: Given a fraction, the student will write two equivalent fractions.

SAMPLE ITEM:

Write two equivalent fractions for the following fraction.

$\frac{3}{4}$

Answer: $\frac{6}{8}$, $\frac{9}{12}$, $\frac{12}{16}$, etc.

ITEM 1

Write two equivalent fractions for the following fraction.

$\frac{7}{9}$

Answer: $\frac{14}{18}$, $\frac{21}{27}$, $\frac{28}{36}$, etc.

ITEM 2

Write two equivalent fractions for the following fraction.

$\frac{1}{3}$

Answer: $\frac{2}{6}$, $\frac{3}{9}$, $\frac{4}{12}$, etc.

ITEM 3

Write two equivalent fractions for the following fraction.

$\frac{2}{5}$

Answer: $\frac{4}{10}$, $\frac{6}{15}$, $\frac{8}{20}$, etc.

ITEM 4

Objective 42

IOX Acceptability Rating: 1

Math

Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Improper Fractions

OBJECTIVE: Given an improper fraction, the student will rewrite it as a mixed numeral or vice versa.

SAMPLE ITEM: Write as a mixed number: $\frac{25}{7}$ Answer: $3\frac{4}{7}$ ITEM 1	Write as a mixed number: $\frac{50}{3}$ Answer: $16\frac{2}{3}$ ITEM 2
Write as an improper fraction: $2\frac{2}{3}$ Answer: $\frac{8}{3}$ ITEM 3	Write as an improper fraction: $8\frac{2}{5}$ Answer: $\frac{42}{5}$ ITEM 4

7

Math

Grade 5-6

Objective 43

IOX Acceptability Rating: 1

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Fractions

OBJECTIVE: Given a common fraction or a mixed numeral, the student will classify it as a common fraction, a decimal fraction, or a mixed numeral.

SAMPLE ITEMS:

Classify the following as a common fraction, a decimal fraction, or a mixed numeral.

.16

Answer: Decimal Fraction

ITEM 1

Classify the following as a common fraction, a decimal fraction, or a mixed numeral.

$12\frac{1}{6}$

Answer: Mixed Numeral.

ITEM 2

Classify the following as a common fraction, a decimal fraction, or a mixed numeral.

$\frac{2}{3}$

Answer: Common Fraction

ITEM 3

Classify the following as a common fraction, a decimal fraction, or a mixed numeral.

17.5

Answer: Decimal Fraction

ITEM 4

Objective 44 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Decimal Numerals

OBJECTIVE: Given a decimal numeral, the student will rewrite it in words.

SAMPLE ITEMS:

Write the following number in words.

6.25

Answer: Six and twenty-five hundredths

ITEM 1

Write the following number in words.

281.6

Answer: Two hundred eighty-one and sixth tenths

ITEM 2

Write the following number in words.

88.92

Answer: Eighty-eight and ninety-two hundredths

ITEM 3

Write the following number in words.

26,701.8

Answer: Twenty-six thousand, seven hundred one and eight tenths

ITEM 4

Objective 45 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Decimal Fractions

OBJECTIVE: Given a mixed number whose fraction has the denominator 10, 100, or 1000, the student will write it as a decimal numeral.

SAMPLE ITEMS:

Write this numeral as a decimal numeral. $53\frac{9}{10}$ Answer: 53.9 ITEM 1	Write this numeral as a decimal numeral. $6\frac{1}{10}$ Answer: 6.1 ITEM 2
Write this numeral as a decimal numeral. $4\frac{3}{100}$ Answer: 4.03 ITEM 3	Write this numeral as a decimal numeral. $100\frac{100}{1000}$ Answer: 100.100 ITEM 4

Objective 46 | Math

IOX Acceptability Rating: 1 | Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Decimal Numerals

OBJECTIVE: Given a decimal numeral, the student will write it in expanded form.

SAMPLE ITEMS:

Write this number in terms of hundreds, tens, ones, tenths, hundredths, and thousandths; i.e., expanded notation.

23.74

Answer: $(2 \times 10) + (3 \times 1) + (7 \times \frac{1}{10}) + (4 \times \frac{1}{100})$

ITEM 1

Write this number in terms of hundreds, tens, ones, tenths, hundredths, and thousandths; i.e., expanded notation.

128.69

Answer: $(1 \times 100) + (2 \times 10) + (8 \times 1) + (6 \times \frac{1}{10}) + (9 \times \frac{1}{100})$

ITEM 2

Write this number in terms of hundreds, tens, ones, tenths, hundredths, and thousandths; i.e., expanded notation.

349.271

Answer: $(3 \times 100) + (4 \times 10) + (9 \times 1) + (2 \times \frac{1}{10}) + (7 \times \frac{1}{100}) + (1 \times \frac{1}{1000})$

ITEM 3

Write this number in terms of hundreds, tens, ones, tenths, hundredths, and thousandths; i.e. expanded notation.

551.645

Answer: $(5 \times 100) + (5 \times 10) + (1 \times 1) + (6 \times \frac{1}{10}) + (4 \times \frac{1}{100}) + (5 \times \frac{1}{1000})$

ITEM 4

Objective 47 — Math

IOX Acceptability Rating: 1 — Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Indicated Division

OBJECTIVE: Given a fraction in which the numerator exceeds the denominator, the student will rewrite the fraction as a decimal and a mixed number.

SAMPLE ITEMS:

Rewrite the fraction as a decimal and mixed number.

$\frac{25}{4}$ = ____ = ____

Answer: $6\frac{1}{4}$, 6.25

ITEM 1

Rewrite the fraction as a decimal and mixed number.

$\frac{50}{4}$= ____= ____

Answer: $12\frac{1}{2}$, 12.5

ITEM 2

Rewrite the fraction as a decimal and mixed number.

$\frac{42}{5}$ = ____ = ____

Answer: $8\frac{2}{5}$, 8.4

ITEM 3

Rewrite the fraction as a decimal and mixed number.

$\frac{60}{8}$ = ____ = ____

Answer: $7\frac{1}{2}$, 7.5

ITEM 4

Objective 48 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Names for Numbers

OBJECTIVE: Given a mixed number, the student will change it to a decimal fraction by first writing the mixed number as the sum of two numbers, then as a fraction, and finally as a decimal numeral.

SAMPLE ITEMS:

Write this number as the sum of two numbers, as a fraction, and as a decimal numeral.

$6\frac{7}{10}$ = ___ = ___ = ___

Answer: $6+\frac{7}{10}$, $\frac{67}{10}$, 6.7

ITEM 1

Write this number as the sum of two numbers, as a fraction, and as a decimal numeral.

$4\frac{3}{10}$ = ___ = ___ = ___

Answer: $4+\frac{3}{10}$, $\frac{43}{10}$, 4.1

ITEM 2

Write this number as the sum of two numbers, as a fraction, and as a decimal numeral.

$9\frac{4}{10}$ = ___ = ___ = ___

Answer: $9+\frac{4}{10}$, $\frac{94}{10}$, 9.4

ITEM 3

Write this number as the sum of two numbers, as a fraction, and as a decimal numeral.

$11\frac{6}{10}$ = ___ = ___ = ___

Answer: $11+\frac{6}{10}$, $\frac{116}{10}$, 11.6

ITEM 4

Objective 49

Math

IOX Acceptability Rating: 1

Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Rounding Off

OBJECTIVE: Given a numeral, the student will round it off to its nearest ten.

SAMPLE ITEMS:

Round off this number to its nearest ten.

46

Answer: 50

ITEM 1

Round off this number to its nearest ten.

38

Answer: 40

ITEM 2

Round off this number to its nearest ten.

76

Answer: 80

ITEM 3

Round off this number to its nearest ten.

84

Answer: 80

ITEM 4

Objective 50

IOX Acceptability Rating: 1

Math

Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Rounding Off

OBJECTIVE: Given a numeral, the student will round it off to its nearest hundred.

SAMPLE ITEMS:

Round off this number to the nearest hundred.

368

Answer: 400

ITEM 1

Round off this number to the nearest hundred.

807

Answer: 800

ITEM 2

Round off this number to the nearest hundred.

723

Answer: 700

ITEM 3

Round off this number to the nearest hundred.

451

Answer: 500

ITEM 4

Objective 51 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Place Value

OBJECTIVE: Given a nine-digit number, the student will name the place value for each group of three digits.

SAMPLE ITEMS:

Name the place value for each group of three digits.

473, 201,715

Answer: 473=millions
201=thousands
715=ones

ITEM 1

Name the place value for each group of three digits.

605,819,774

Answer: 605=millions
819=thousands
774=ones

ITEM 2

Name the place value for each group of three digits.

600,000,010

Answer: 600=millions
000=thousands
715=ones

ITEM 3

Name the place value for each group of three digits.

110,055,862

Answer: 110=millions
055=thousands
862=ones

ITEM 4

Objective 52 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Exponents

OBJECTIVE: Given a number with an exponent, the student will rename it.

SAMPLE ITEMS:

Rename the number.

2^3

Answer: 8

ITEM 1

Rename the number.

2^4

Answer: 16

ITEM 2

Rename the number.

3^2

Answer: 9

ITEM 3

Rename the number.

3^3

Answer: 27

ITEM 4

Objective 53 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Exponential Notation

OBJECTIVE: Given a numeral with an exponential notation, the student will name the product.

SAMPLE ITEMS:

Name the product of the following number.

4^2

Answer: 16

ITEM 1

Name the product of the following number.

2^3

Answer: 8

ITEM 2

Name the product of the following number.

2^4

Answer: 16

ITEM 3

Name the product of the following number.

10^2

Answer: 100

ITEM 4

Objective 54 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Expanded Notation

OBJECTIVE: Given a base ten five place numeral, the student will write the expanded numeral using exponential notation.

SAMPLE ITEMS:

Write the following numeral in expanded, exponential notation.

81,437

Answer:

$8 \times 10^4 + 1 \times 10^3 + 4 \times 10^2 +$
$3 \times 10^1 + 7 \times 10^0$

ITEM 1

Write the following numeral in expanded, exponential notation.

70,000

Answer:

7×10^4

ITEM 2

Write the following numeral in expanded, exponential notation.

38,614

Answer:

$3 \times 10^4 + 8 \times 10^3 + 6 \times 10^2 +$
$1 \times 10^1 + 4 \times 10^0$

ITEM 3

Write the following numeral in expanded, exponential notation.

13, 034

Answer:

$1 \times 10^4 + 3 \times 10^3 + 3 \times 10^1 +$
4×10^0

ITEM 4

Objective 55 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Lowest Common Multiple

OBJECTIVE: Given a pair of numbers, the student will name the lowest common multiple.

SAMPLE ITEMS:

Name the lowest common multiple of the following pair of numbers.

3, 4

Answer: 12

ITEM 1

Name the lowest common multiple of the following pair of numbers.

3, 6

Answer: 6

ITEM 2

Name the lowest common multiple of the following pair of numbers.

5,7

Answer: 35

ITEM 3

Name the lowest common multiple of the following pair of numbers.

7, 14

Answer: 14

ITEM 4

Objective 56

IOX Acceptability Rating: 1

Math

Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Greatest Common Factor

OBJECTIVE: Given a pair of numbers, the student will write the greatest common factor.

SAMPLE ITEMS:

Write the greatest common factor for the given pair of numbers.

8, 12

Answer: 4

ITEM 1

Write the greatest common factor for the given pair of numbers.

20,28

Answer: 4

ITEM 2

Write the greatest common factor for the given pair of numbers.

15, 20

Answer: 5

ITEM 3

Write the greatest common factor for the given pair of numbers.

18,24

Answer: 6

ITEM 4

Objective 57

IOX Acceptability Rating: 1

Math

Grade 5 - 6

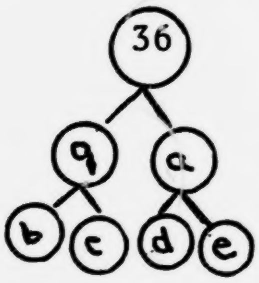
MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Prime Factorization

OBJECTIVE: Given a composite number the student will find the complete factorization by writing numbers in the factor trees.

SAMPLE ITEMS:

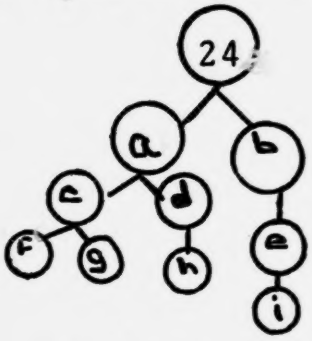
Complete the factor tree.



Answer: a = 4, b = 3, c = 3, d = 2, e = 2

ITEM 1

Complete the factor tree.



Answer: a = 8. b = 3, c = 4, d = 2, e = 3, f = 2; g = 2, h = 2; i = 3

ITEM 2

Objective 58

IOX Acceptability Rating: 1

Math

Grade 5-6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Prime and Composite Numbers

OBJECTIVE: Given a whole number between one and one hundred, the student will identify it as a prime or a composite number.

SAMPLE ITEM:

Identify this number as prime or composite.

16

Answer: Composite

ITEM 1

Identify this number as prime or composite.

4

Answer: Composite

ITEM 2

Identify this number as prime or composite.

13

Answer: Prime

ITEM 3

Identify this number as prime or composite.

57

Answer: Composite

ITEM 4

Objective 59 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Whole Numbers; 0-9,000,000,000

OBJECTIVE: Given a ten-digit numeral, the student will write the number words.

SAMPLE ITEMS:

Write the number words for the following number.

5,104,263,101

Answer: five billion, one hundred four million, two hundred sixty-three thousand, one hundred one

ITEM 1

Write the number words for the following number.

1,000,100,001

Answer: one billion, one hundred thousand, one

ITEM 2

Write the number words for the following number.

3,001,420,050

Answer: three billion, one million, four hundred twenty thousand, fifty

ITEM 3

Write the number words for the following number.

6,012,200,100

Answer: six billion, twelve million, two hundred thousand, one hundred

ITEM 4

Objective 60

IOX Acceptability Rating: 1

Math

Grade 6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Scientific Notation

OBJECTIVE: The student will rename a given number using scientific notation.

SAMPLE ITEMS:

Write in scientific notation:

34, 589

Answer: 3.4589×10^4

ITEM 1

Write in scientific notation:

16,502,818

Answer: 1.6502818×10^7

ITEM 2

Write in scientific notation:

4000

Answer: 4.0×10^3

ITEM 3

Write in scientific notation:

93,000,000

Answer: 9.3×10^7

ITEM 4

Objective 61 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Repeating and Terminating Decimals

OBJECTIVE: Given a set of decimals, the student will identify the repeating and terminating decimals.

SAMPLE ITEMS:

List the repeating and terminating decimals.

$\{.\overline{333}, .5, .25\}$

Answer: Repeating: $.\overline{333}$
Terminating: .5, .25

ITEM 1

List the repeating and terminating decimals.

$\{.75, .\overline{666}, .01\}$

Answer: Repeating: $.\overline{666}$
Terminating: .75, .01

ITEM 2

List the repeating and terminating decimals.

$\{.\overline{121212}, .1112, .\overline{616161}\}$

Answer: Repeating: $.\overline{121212}$
$.\overline{616161}$
Terminating: .1112

ITEM 3

List the repeating and terminating decimals.

{.375, .075, .2}

Answer: Repeating: none
Terminating: .375, .075
.2

ITEM 4

Objective 62 | Math

IOX Acceptability Rating: 1 | Grade 6

MAJOR CATEGORY: Numbers, Numerals, Numeration Systems

SUB-CATEGORY: Base 2

OBJECTIVE: Given a number in base 2, the student will name its equivalent in base 10.

SAMPLE ITEMS:

Write the following base 2 number in base 10.

10_2

Answer: 2

ITEM 1

Write the following base 2 number in base 10.

1101_2

Answer: 13

ITEM 2

Write the following base 2 number in base 10.

111_2

Answer: 7

ITEM 3

Write the following base 2 number in base 10.

10110_2

Answer: 22

ITEM 4

Objective 63

IOX Acceptability Rating: 1

Math

Grade: 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Basic Addition and Subtraction Facts

OBJECTIVE: Given a series of open addition and subtraction equations, the student will complete them by filling in the missing sum or difference.

SAMPLE ITEMS:

Fill in the missing sum. 1 + 1 = Answer: 2 ITEM 1	Fill in the missing difference. 2 - 1 = Answer: 1 ITEM 2
Fill in the missing sum. 1 + 2 = Answer: 3 ITEM 3	Fill in the missing difference. 3 - 1 = Answer: 2 ITEM 4

Objective 64 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Joining, Separating, and Comparing Sets as a Basis for Addition and Subtraction

OBJECTIVE: Given a group of incomplete statements involving the joining and separation of sets, the student will complete the state.

SAMPLE ITEMS:

A set of 6 joined with a set of 9 forms a set of ____. Answer: 15 ITEM 1	A set of 7 separted from a set of 12 leaves a set of ____. Answer: 5 ITEM 2
A set of 9 separated from a set of 20 leaves a set of ____. Answer: 11 ITEM 3	A set of 12 joined with a set of 6 forms a set of ____. Answer: 18 ITEM 4

Objective 65 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Zero as the Identity Element

> **OBJECTIVE:** Given an addition problem with zero as an addend, the student will solve it.

SAMPLE ITEMS:

Find the sum. 16 + 0 Answer: 16 ITEM 1	Find the sum. 9 +0 Answer: 9 ITEM 2
Find the sum. 4 +0 Answer: 4 ITEM 3	Find the sum. 20 + 0 Answer: 20 ITEM 4

Objective 66
IOX Acceptability Rating: 1

Math
Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: 2-Place Addition Without Regrouping

OBJECTIVE: Given a 2-place addition problem which does not involve regrouping, the student will solve it.

SAMPLE ITEMS:

Find the sum.

$$\begin{array}{r} 42 \\ +\underline{35} \end{array}$$

Answer: 77

ITEM 1

Find the sum.

$$\begin{array}{r} 21 \\ +\underline{37} \end{array}$$

Answer: 58

ITEM 2

Find the sum.

$$\begin{array}{r} 52 \\ +\underline{27} \end{array}$$

Answer: 79

ITEM 3

Find the sum.

$$\begin{array}{r} 27 \\ +\underline{21} \end{array}$$

Answer: 48

ITEM 4

Objective 67 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: 3-Place Addition Without Regrouping

OBJECTIVE: Given a 3-place addition problem which does not involve regrouping, the student will solve it.

SAMPLE ITEMS:

Find the sum. 217 +470 Answer: 687 ITEM 1	Find the sum. 123 +312 Answer: 435 ITEM 2
Find the sum. 630 +350 Answer: 980 ITEM 3	Find the sum. 302 +510 Answer: 812 ITEM 4

Objective 68 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: 2-Place Addition with Regrouping

OBJECTIVE: Given a 2-place addition problem with regrouping, the student will solve it.

SAMPLE ITEMS:

Find the sum. 44 +26 Answer: 70 ITEM 1	Find the sum. 47 +36 Answer: 83 ITEM 2
Find the sum. 96 +25 Answer: 121 ITEM 3	Find the sum. 65 +36 Answer: 101 ITEM 4

Objective 69 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Addition With Regrouping
(3-place with regrouping)

OBJECTIVE: Given a 3-place addition problem with regrouping, the student will solve it.

SAMPLE ITEMS:

Find the sum. 166 +399 Answer: 565 ITEM 1	Find the sum, 106 +167 Answer: 273 ITEM 2
Find the sum, 305 +689 Answer: 994 ITEM 3	Find the sum. 634 268 Answer: 902 ITEM 4

Objective 70
IOX Acceptability Rating: 1

Math
Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Addition With Regrouping (4 through 7 places)

OBJECTIVE: Given an addition problem from 4 to 7 places with regrouping, the student will solve it.

SAMPLE ITEMS:

Find the sum.

$$\begin{array}{r} 7658 \\ +5436 \\ \underline{8360} \end{array}$$

Answer: 21,454

ITEM 1

Find the sum.

$$\begin{array}{rr} & 62431 \\ & 57152 \\ + & 8012 \\ & \underline{76201} \end{array}$$

Answer: 203,796

ITEM 2

Find the sum.

$$\begin{array}{r} 163463 \\ +198726 \\ \underline{124392} \end{array}$$

Answer: 486,581

ITEM 3

Find the sum.

$$\begin{array}{r} 1986532 \\ 1286319 \\ \underline{9468476} \end{array}$$

Answer: 12,741,327

ITEM 4

Objective 71 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Verbal Problem With Addition

OBJECTIVE: Given a word problem, the student will solve it using the operation of addition.

SAMPLE ITEMS:

Solve the following problem. Rose bought 50 balloons for her birthday party, and her mother bought 60. How many balloons were there in all? Answer: 110 ITEM 1	Solve the following problem. Edith collected 103 sea shells during the summer, and her friend Jean collected 73. How many sea shells did they have in all? Answer: 175 ITEM 2
Neil bought a bag of 250 peanuts, and his cousin Louis bought a bag of 75. How many peanuts did they have in all? Answer: 325 ITEM 3	John and Peter won 164 marbles last month and 229 marbles the month before. How many marbles did they win in all? Answer: 393 marbles ITEM 4

Objective 72 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Associative Property

OBJECTIVE: Given an open equation, the student will group two addends to make a sum, add the other addend, and name the sum.

SAMPLE ITEMS:

In the problem below, use ( ) to group two addends, find their sum and then add the other addend.

6 + 9 + 3 = _____

Answer:

(6 + 9) + 3 = 18

ITEM 1

In the problem below, use ( ) to group two addends, find their sum and then add the other addend.

11 + 1 + 6 = _____

Answer:

11 + (1 + 6) = 18

ITEM 2

In the problem below, use ( ) to group two addends, find their sum and then add the other addend.

4 + 3 + 9=_____

Answer:

(4 + 3) + 9 = 16

ITEM 3

In the problem below, use ( ) to group two addends, find their sum and then add the other addend.

7 + 10 + 3 = _____

Answer:

7 + (10 + 3) = 20

ITEM 4

Objective 73 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Commutative Property - Addition

OBJECTIVE: Given an addition problem with two addends, the student will use the Commutative Property to rewrite the problem and name the sum.

SAMPLE ITEM:

Use the Commutative Property to rewrite the problem and name the sum.

7 + 14 =

Answer: 14 + 7 = 21

ITEM 1

Use the Commutative Property to rewrite the problem and name the sum.

33 + 13

Answer: 13 + 33 = 46

ITEM 2

Use the Commutative Property to rewrite the problem and name the sum.

12 + 50 =

Answer: 50 + 12 = 62

ITEM 3

Use the Commutative Property to rewrite the problem and name the sum.

14 + 90 =

Answer: 90 +14 = 104

ITEM 4

Objective 74 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Checking Addition

OBJECTIVE: Given an addition problem, the student will find the sum and check the answer by adding in the opposite direction.

SAMPLE ITEM:

Find the sum and check.

46
23
19
10

Answer:

10 + 19 + 23 + 46 = 98

ITEM 1

Find the sum and check.

54
63
21

Answer:

21 + 63 + 54 = 138

ITEM 2

Find the sum and check.

21
32
43

Answer:

43 + 32 + 21 = 96

ITEM 3

Find the sum and check.

33
16
03
12

Answer:

12 + 3 + 16 + 33 = 64

ITEM 4

Objective 75 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Zero in Subtraction

OBJECTIVE: Given a subtraction problem with zero as the subtrahend, the student will solve it.

SAMPLE ITEMS:

Find the difference.

$$\begin{array}{r} 9 \\ -\underline{0} \end{array}$$

Answer: 9

ITEM 1

Find the difference.

$$\begin{array}{r} 12 \\ -\underline{\ \ 0} \end{array}$$

Answer: 12

ITEM 2

Find the difference,

$$\begin{array}{r} 30 \\ -\underline{\ \ 0} \end{array}$$

Answer: 30

ITEM 3

Find the difference.

$$\begin{array}{r} 16 \\ -\underline{\ \ 0} \end{array}$$

Answer: 16

ITEM 4

Objective 76 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: 2-Place Subtraction Without Regrouping

OBJECTIVE: Given a 2-place subtraction problem without regrouping, the student will solve it.

SAMPLE ITEMS:

Find the difference.

$$\begin{array}{r} 89 \\ -25 \\ \hline \end{array}$$

Answer: 64

ITEM 1

Find the difference.

$$\begin{array}{r} 38 \\ -17 \\ \hline \end{array}$$

Answer: 21

ITEM 2

Find the difference.

$$\begin{array}{r} 58 \\ -45 \\ \hline \end{array}$$

Answer: 13

ITEM 3

Find the difference.

$$\begin{array}{r} 79 \\ -27 \\ \hline \end{array}$$

Answer: 52

ITEM 4

Objective 77 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: 3-Place Subtraction Without Regrouping

OBJECTIVE: Given a subtraction problem of 3-places without regrouping, the student will solve it.

SAMPLE ITEMS:

Find the difference.

$$\begin{array}{r} 923 \\ -\underline{210} \end{array}$$

Answer: 713

ITEM 1

Find the difference.

$$\begin{array}{r} 540 \\ -\underline{320} \end{array}$$

Answer: 220

ITEM 2

Find the difference.

$$\begin{array}{r} 696 \\ -\underline{243} \end{array}$$

Answer: 453

ITEM 3

Find the difference.

$$\begin{array}{r} 926 \\ -\underline{415} \end{array}$$

Answer: 511

ITEM 4

Objective 78 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: 2-Place Subtraction With Regrouping

OBJECTIVE: Given a 2-place subtraction problem with regrouping, the student will solve it.

SAMPLE ITEMS:

Find the difference.

$$\begin{array}{r}75\\-26\\\hline\end{array}$$

Answer: 49

ITEM 1

Find the difference.

$$\begin{array}{r}46\\-37\\\hline\end{array}$$

Answer: 9

ITEM 2

Find the difference.

$$\begin{array}{r}43\\-15\\\hline\end{array}$$

Answer: 28

ITEM 3

Find the difference.

$$\begin{array}{r}98\\-69\\\hline\end{array}$$

Answer: 29

ITEM 4

Objective 79 Math

IOX Acceptability Rating: 1 Grade 4- 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Subtraction With Regrouping (3-Place)

OBJECTIVE: Given a 3-place subtraction problem with regrouping, the student will solve it.

SAMPLE ITEMS:

Find the difference. 324 -136 Answer: 188 ITEM 1	Find the difference. 419 -234 Answer: 185 ITEM 2
Find the difference. 674 -125 Answer: 549 ITEM 3	Find the difference. 950 -858 Answer: 92 ITEM 4

Objective 80

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Subtraction With Regrouping (4 through 7 places)

OBJECTIVE: Given a subtraction problem of from 4 of 7 places with regrouping, the student will solve it.

SAMPLE ITEM:

Find the difference. 4551 -1864 Answer: 2,687 ITEM 1	Find the difference. 74146 - 9287 Answer: 64,859 ITEM 2
Find the difference. 963254 -692871 Answer: 270,383 ITEM 3	Find the difference. 3962491 -1469826 Answer: 2,492,665 ITEM 4

Objective 81 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Verbal Problems With Subtraction

OBJECTIVE: Given a word problem, the student will solve it using the operation of subtraction.

SAMPLE ITEMS:

Solve the following problem. Paul has 165 cards with pictures of baseball players. Juan has 136. How many more cards does Paul have? Answer: 29 ITEM 1	Solve the following problem. Laura has 403 stamps in her stamp collection, Lolly has 304. How many more stamps does Laura have? Answer: 99 ITEM 2
Dorothy had 1,050 trading stamps and she gave 100 to her sister Rhoda. How many stamps did she have left? Answer: 950 ITEM 3	Scott had 306 marbles, and he gave 50 to his friend Ron. How many marbles did he have left? Answer: 256 ITEM 4

Objective 82
IOX Acceptability Rating: 1

Math
Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties
SUB-CATEGORY: Checking Subtraction Problems

OBJECTIVE: Given a subtraction problem, the student will find the difference and check it by addition.

SAMPLE ITEMS:

Find the difference and check by addition.

64
-27

Answer: 37; 37 + 27 = 64

ITEM 1

Find the difference and check by addition.

320
- 42

Answer: 278; 278 + 42 = 320

ITEM 2

Find the difference and check by addition.

164
- 7

Answer: 157; 157 + 7 = 164

ITEM 3

Find the difference and check by addition.

24
-19

Answer: 5; 5 + 19 = 24

ITEM 4

Objective 83 Math

IOX Acceptability RAting: 1 Grade 4-6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Inverse Relationship Between Addition and Subtraction

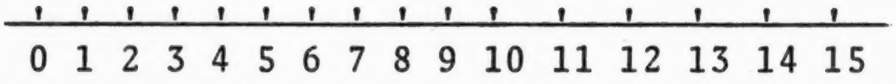
OBJECTIVE: Given a pair of equations and a number line, the student will show the pair of equations on the number line.

SAMPLE ITEMS:

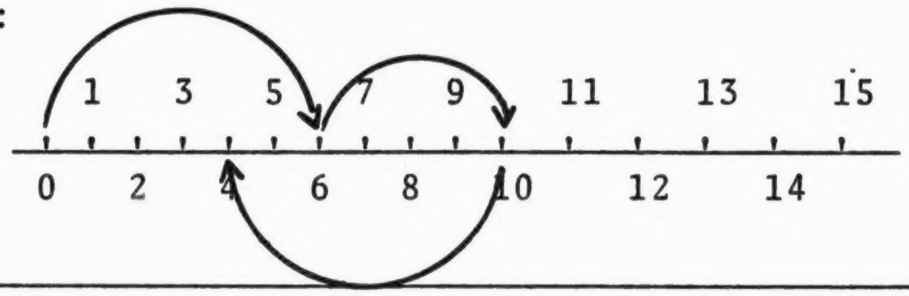
Show the pair of equations on the number line.

$$6 + 4 = 10$$

$$10 - 6 = 4$$


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Answer:


1 3 5 7 9 11 13 15
0 2 4 6 8 10 12 14

ITEM 1

Objective 84 | Math

IOX Acceptability Rating: 1 | Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Addition and Subtraction With Money

OBJECTIVE: Given an addition or subtraction problem involving money, the student will solve it.

SAMPLE ITEMS:

Find the sum. $649.32 + 162.14 100.96 Answer: $912.42 ITEM 1	Find the difference. $439.62 - 214.63 Answer: $224.99 ITEM 2
Find the sum. $2.05 + 4.60 .86 1.97 Answer: $9.48 ITEM 3	Find the difference. $13.84 - 9.98 Answer: $3.86 ITEM 4

Objective 85 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Addition of Measures (Liquid, Linear, Time...)

OBJECTIVE: Given an addition problem of units of measure (liquid, linear, time, etc.), the student will find the sum.

SAMPLE ITEMS:

Find the sum.

7 gal. 4 qts.
+1 gal.

Answer: 9 gal.

ITEM 1

Find the sum.

3 gal. 1 qt. 2 pt.
+1 gal. 2 qt. 3 pt.

Answer: 5 gal. 1 qt. 1 pt.

ITEM 2

Find the sum.

3 ft. 6 in.
+2 ft. 9 in.

Answer: 6 ft. 3 in.
or
2 yd $\frac{1}{4}$ ft.

ITEM 3

Find the sum.

9 hrs. 10 min. 26 sec.
+2 hrs. 46 min. 42 sec.

Answer: 11 hrs. 57 min. 8 sec.

ITEM 4

Objective 86

Math

Grade 4 - 6

IOX Acceptability Rating: 1

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Subtraction of Measures (Liquid, Linear, Time...)

OBJECTIVE: Given a subtraction problem of units of measure (liquid, linear, time, etc.), the student will find the difference.

SAMPLE ITEMS:

Find the difference. 15 hr. 23 min. - 2 hr. 6 min. Answer: 13 hr. 17 min. ITEM 1	Find the difference. 12 ft. 6 in. - 3 ft. 9 in. Answer: 8 ft. 9 in. ITEM 2
Find the difference. 16 lb. 9 oz. -12 lb.12 oz. Answer: 3 lb. 13 oz. ITEM 3	Find the difference. $6\frac{1}{2}$ gal. $-2\frac{1}{2}$ gal. Answer: 4 gal. ITEM 4

Objective 87

Math

Grade 4 - 6

IOX Acceptability Rating: 1

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Addition of Fractional Numbers With Like Denominators

OBJECTIVE: Given a problem involving addition of fractional numbers with like denominators, the student will find the sum.

SAMPLE ITEMS:

Find the sum.

$\frac{1}{6}$

$+\frac{3}{6}$

Answer: $\frac{4}{6}$ or $\frac{2}{3}$

ITEM 1

Find the sum.

$\frac{1}{9}$

$+\frac{4}{9}$

Answer: $\frac{5}{9}$

ITEM 2

Find the sum.

$\frac{8}{12}$

$+\frac{1}{12}$

Answer: $\frac{9}{12}$ or $\frac{3}{4}$

ITEM 3

Find the sum.

$\frac{6}{18}$

$+\frac{1}{18}$

Answer: $\frac{7}{18}$

ITEM 4

Objective 88 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Addition of Like Denominator Fractions With Sums Greater Than One Expressed in Simplest Terms.

OBJECTIVE: Given an addition problem of fractional numbers with like denominators whose sum is greater than one, the student will express the sum in simplest form.

SAMPLE ITEMS:

Find the sum and express in simplest terms. $\frac{4}{6} + \frac{3}{6}$ Answer: $\frac{7}{6} = 1\frac{1}{6}$ ITEM 1	Find the sum and express in simplest terms. $\frac{3}{4} + \frac{3}{4}$ Answer: $\frac{6}{4} = 1\frac{1}{2}$ ITEM 2
Find the sum and express in simplest terms. $\frac{4}{5} + \frac{4}{5}$ Answer: $\frac{8}{5} = 1\frac{3}{5}$ ITEM 3	Find the sum and express in simplest terms. $\frac{8}{9} + \frac{7}{9}$ Answer: $\frac{15}{9} = 1\frac{2}{3}$ ITEM 4

Objective 89

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Subtraction of Like Fractions Less Than One With The Difference Expressed In Simplest Terms.

> OBJECTIVE: Given a subtraction problem of like fractions less than one, the student will find the difference and express it in lowest terms.

SAMPLE ITEMS:

Find the difference and express it in lowest terms.

$$\begin{array}{r} \frac{8}{16} \\ -\;\frac{2}{16} \\ \hline \end{array}$$

Answer: $\frac{3}{8}$

ITEM 1

Find the difference and express it in lowest terms.

$$\begin{array}{r} \frac{3}{4} \\ -\;\frac{2}{4} \\ \hline \end{array}$$

Answer: $\frac{1}{4}$

ITEM 2

Find the difference and express it in lowest terms.

$$\begin{array}{r} \frac{12}{24} \\ -\;\frac{6}{24} \\ \hline \end{array}$$

Answer: $\frac{1}{4}$

ITEM 3

Find the difference and express it in lowest terms.

$$\begin{array}{r} \frac{6}{9} \\ \frac{3}{9} \\ \hline \end{array}$$

Answer: $\frac{1}{3}$

ITEM 4

Objective 90

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Subtraction of Unlike Fractions Less Than One With Differences Expressed in Simplest Terms.

OBJECTIVE: Given a subtraction problem of unlike fractions of less than one, the student will find the difference and express it in simplest terms.

SAMPLE ITEMS:

Find the difference and express it in simplest terms.

$$\begin{array}{r} \frac{4}{6} \\ -\ \frac{1}{12} \\ \hline \end{array}$$

Answer: $\frac{7}{12}$

ITEM 1

Find the difference and express it in simplest terms.

$$\begin{array}{r} \frac{1}{2} \\ -\ \frac{1}{4} \\ \hline \end{array}$$

Answer: $\frac{1}{4}$

ITEM 2

Find the difference and express it in simplest terms.

$$\begin{array}{r} \frac{3}{9} \\ -\ \frac{1}{6} \\ \hline \end{array}$$

Answer: $\frac{1}{6}$

ITEM 3

Find the difference and express it in simplest terms.

$$\begin{array}{r} \frac{5}{12} \\ -\ \frac{2}{24} \\ \hline \end{array}$$

Answer: $\frac{1}{3}$

ITEM 4

Objective 91

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Expanded Numerals in the Addition of Fractions

OBJECTIVE: Given an incomplete equation, the student will complete it by supplying the missing term.

SAMPLE ITEMS:

Solve the equation.

$1 + \frac{3}{8} = \boxed{\frac{\quad}{8}} + \frac{3}{8} = \boxed{\frac{\quad}{8}}$

Answer:

$1 + \frac{3}{8} = \frac{8}{8} + \frac{3}{8} = \frac{11}{8}$

ITEM 1

Solve the equation.

$1 + \frac{5}{6} = \boxed{\frac{\quad}{6}} + \frac{5}{6} = \boxed{\frac{\quad}{6}}$

Answer:

$1 + \frac{5}{6} = \frac{6}{6} + \frac{5}{6} + \frac{11}{6}$

ITEM 2

Solve the equation.

$\frac{6}{5} = 1 + \boxed{\frac{\quad}{\quad}} = \boxed{}$

Answer:

$\frac{6}{5} = 1 + \frac{1}{5} = 1\ \frac{1}{5}$

ITEM 3

Solve the equation.

$\frac{13}{2} = \boxed{} + \boxed{\frac{\quad}{\quad}} = \boxed{}$

Answer:

$\frac{13}{2} = 6 + \frac{1}{2} = 6\ \frac{1}{2}$

ITEM 4

Objective 92 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Expanded Numerals in the Subtraction of Fractions

OBJECTIVE: Given an incomplete subtraction equation of like mixed fractions, the student will complete the equation.

SAMPLE ITEMS:

Solve the following problem and express it in simplest terms.

$$\begin{array}{rl} 6\frac{3}{9} & = 6 + \frac{3}{9} \\ -2\frac{1}{9} & = -2 - \frac{1}{9} \\ \cline{2-2} \end{array}$$

Answer: $4\frac{2}{9}$

ITEM 1

Solve the following problem and express it simplest terms.

$$\begin{array}{rl} 4\frac{3}{4} & = 4 + \frac{3}{4} \\ -2\frac{2}{4} & = -2 - \frac{2}{4} \\ \cline{2-2} \end{array}$$

Answer: $2\frac{1}{4}$

ITEM 2

Solve the following problem and express it in simplest terms.

$$\begin{array}{rl} 12\frac{2}{6} & = 12 + \frac{2}{6} \\ -2\frac{1}{6} & = -2 - \frac{1}{6} \\ \cline{2-2} \end{array}$$

Answer: $10\frac{1}{6}$

ITEM 3

Solve the following problem and express it in simplest terms.

$$\begin{array}{rl} 9\frac{4}{6} & = 9 + \frac{4}{6} \\ -2\frac{1}{6} & = -2 - \frac{1}{6} \\ \cline{2-2} \end{array}$$

Answer: $7\frac{1}{2}$

ITEM 4

Objective 93

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Subtraction of Like Mixed Fractions With Difference in Simplest Forms

OBJECTIVE: Given a subtraction problem of mixed fractions with like denominators, the student will find the difference.

SAMPLE ITEMS:

Find the difference and express it in simplest terms. $\begin{array}{r} 11\frac{3}{6} \\ -\ 2\frac{1}{6} \\ \hline \end{array}$ Answer: $9\frac{1}{3}$ ITEM 1	Find the difference and express it in simplest terms. $\begin{array}{r} 1\frac{3}{10} \\ -\ \frac{7}{10} \\ \hline \end{array}$ Answer: $\frac{3}{5}$ ITEM 2
Find the difference and express it in simplest terms. $\begin{array}{r} 1\frac{5}{16} \\ -\ \frac{11}{16} \\ \hline \end{array}$ Answer: $\frac{5}{8}$ ITEM 3	Find the difference and express it in simplest terms. $\begin{array}{r} 1\frac{7}{16} \\ -\ \frac{9}{16} \\ \hline \end{array}$ Answer: $\frac{7}{8}$ ITEM 4

Objective 94 — Math

IOX Acceptability Rating: 1 — Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Subtraction Of Unlike Mixed Fractions With Difference In Simplest Terms

OBJECTIVE: Given a subtraction problem of unlike mixed fractions, the student will compute the difference and express it in simplest terms.

SAMPLE ITEMS:

Subtract and express the difference in simplest terms.

$$\begin{array}{r} 6\,\frac{9}{12} \\ -\;1\,\frac{1}{4} \\ \hline \end{array}$$

Answer: $5\,\frac{1}{2}$

ITEM 1

Subtract and express the difference in simplest terms.

$$\begin{array}{r} 2\,\frac{7}{9} \\ -\;1\,\frac{1}{3} \\ \hline \end{array}$$

Answer: $1\,\frac{4}{9}$

ITEM 2

Subtract and express the difference in simplest terms.

$$\begin{array}{r} 9\,\frac{2}{3} \\ -\;4\,\frac{1}{6} \\ \hline \end{array}$$

Answer: $5\,\frac{1}{2}$

ITEM 3

Subtract and express the difference in simplest terms.

$$\begin{array}{r} 8\,\frac{4}{5} \\ -\;3\,\frac{3}{10} \\ \hline \end{array}$$

Answer: $4\,\frac{1}{2}$

ITEM 4

Objective 95 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Subtraction of a Fraction From a Whole Number (Differences in Simplest Terms.

OBJECTIVE: Given a problem involving the subtraction of a fraction from a whole number, the student will find the difference and express it in simplest terms.

SAMPLE ITEMS:

Find the difference and express it in simplest terms.

$$\begin{array}{r} 1 \\ - \frac{3}{4} \\ \hline \end{array}$$

Answer: $\frac{1}{4}$

ITEM 1

Find the difference and express it in simplest terms.

$$\begin{array}{r} 1 \\ - \frac{4}{5} \\ \hline \end{array}$$

Answer: $\frac{1}{5}$

ITEM 2

Find the difference and express it in simplest terms.

$$\begin{array}{r} 6 \\ - \frac{4}{8} \\ \hline \end{array}$$

Answer: $5 \frac{1}{2}$

ITEM 3

Find the difference and express it in simplest terms.

$$\begin{array}{r} 9 \\ \frac{6}{10} \\ \hline \end{array}$$

Answer: $8 \frac{2}{5}$

ITEM 4

Objective 96 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Additions of Decimals (Tenths, Hundredths, Thousandths...) Without Regrouping

OBJECTIVE: Given a decimal addition problem (tenths, hundredths, thousandths, etc.) without regrouping, the student will find the sum.

SAMPLE ITEMS:

Find the sum.

$$\begin{array}{r} .26 \\ +.13 \\ \hline \end{array}$$

Answer: .39

ITEM 1

Find the sum.

$$\begin{array}{r} .34 \\ +.52 \\ \hline \end{array}$$

Answer: .86

ITEM 2

Find the sum.

$$\begin{array}{r} .94 \\ +.03 \\ \hline \end{array}$$

Answer: .97

ITEM 3

Find the sum.

$$\begin{array}{r} .86 \\ +.13 \\ \hline \end{array}$$

Answer: .99

ITEM 4

Objective 97 | Math
IOX Acceptability Rating: 1 | Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Addition of Mixed-Decimals Without Regrouping

OBJECTIVE: Given an addition problem of mixed decimals without regrouping, the student will find the sum.

SAMPLE ITEMS:

Find the sum. $\begin{array}{r}1.2\\+2.2\\\hline\end{array}$ Answer: 3.4 ITEM 1	Find the sum. $\begin{array}{r}1.3\\+4.3\\\hline\end{array}$ Answer: 5.6 ITEM 2
Find the sum. $\begin{array}{r}1.8\\+6.1\\\hline\end{array}$ Answer: 7.9 ITEM 3	Find the sum. $\begin{array}{r}3.5\\+4.4\\\hline\end{array}$ Answer: 7.9 ITEM 4

Objective 98

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Addition of Decimals (Tenths, Hundredths, Thousandths,...) With Regrouping

OBJECTIVE: Given a decimal addition problem (tenths, hundredths, thousandths, etc.) with regrouping, the student will find the sum.

SAMPLE ITEMS:

Find the sum.

$$\begin{array}{r} .37 \\ +.55 \\ \hline \end{array}$$

Answer: .92

ITEM 1

Find the sum.

$$\begin{array}{r} .56 \\ +.65 \\ \hline \end{array}$$

Answer: 1.21

ITEM 2

Find the sum.

$$\begin{array}{r} .84 \\ +.07 \\ \hline \end{array}$$

Answer: .91

ITEM 3

Find the sum.

$$\begin{array}{r} .92 \\ +.13 \\ \hline \end{array}$$

Answer: 1.05

ITEM 4

Objective 99 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Addition of Mixed Decimals With Regrouping

OBJECTIVE: Given a addition problem of mixed decimals with regrouping, the student will find the sum.

SAMPLE ITEMS:

Find the sum. 3.9 +2.6 Answer: 6.5 ITEM 1	Find the sum. 4.3 +6.8 Answer: 11.1 ITEM 2
Find the sum. 1.5 +3.8 Answer: 5.3 ITEM 3	Find the sum. 6.9 +9.6 Answer: 16.5 ITEM 4

Objective 100

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Operation and Their Properties

SUB-CATEGORY: Subtraction of Mixed Decimals Without Regrouping

OBJECTIVE: Given a subtraction problem of mixed decimals without regrouping, the student will find the difference.

SAMPLE ITEMS:

Find the difference.

$$\begin{array}{r} 6.6 \\ \underline{-2.4} \end{array}$$

Answer: 4.2

ITEM 1

Find the difference.

$$\begin{array}{r} 5.3 \\ \underline{-1.2} \end{array}$$

Answer: 4.1

ITEM 2

Find the difference.

$$\begin{array}{r} 6.8 \\ \underline{-4.6} \end{array}$$

Answer: 2.2

ITEM 3

Find the difference.

$$\begin{array}{r} 9.9 \\ \underline{-6.3} \end{array}$$

Answer: 3.6

ITEM 4

Objective 101

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Subtraction of Decimals (Tenths, Hundredths, Thousandths,...) Without Regrouping

OBJECTIVE: Given a subtraction problem of decimals (tenths, hundredths, thousandths, etc.) without regrouping, the student will find the difference.

SAMPLE ITEMS:

Find the difference. $\begin{array}{r} .99 \\ \underline{-.26} \end{array}$ Answer: .73 ITEM 1	Find the difference. $\begin{array}{r} .73 \\ \underline{-.62} \end{array}$ Answer: .11 ITEM 2
Find the difference. $\begin{array}{r} .53 \\ \underline{-.52} \end{array}$ Answer: .01 ITEM 3	Find the difference. $\begin{array}{r} .64 \\ \underline{-.44} \end{array}$ Answer: .2 ITEM 4

Objective 102
Math

IOX Acceptability Rating: 1
Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Subtraction of Mixed Decimals With Regrouping

OBJECTIVE: Given a subtraction problem of mixed decimals with regrouping, the student will find the difference.

SAMPLE ITEMS:

Find the difference. 6.3 -4.5 Answer: 1.8 ITEM 1	Find the difference. 17.2 - 5.3 Answer : 11.9 ITEM 2
Find the difference. 6.43 -5.54 Answer: .89 ITEM 3	Find the difference. 23.03 -14.12 Answer: 8.91 ITEM 4

Objective 103 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Subtraction of Decimals
(Tenths, Hundredths, Thousandths,...)
With Regrouping

OBJECTIVE: Given a subtraction problem of decimals (tenths, hundredths, thousandths, etc., with regrouping the student will find the difference.

SAMPLE ITEMS:

Find the difference.

.44
-.35

Answer: .09

ITEM 1

Find the difference.

.29
-.21

Answer: .08

ITEM 2

Find the difference.

.76
-.38

Answer: .38

ITEM 3

Find the difference.

.33
-.15

Answer: .18

ITEM 4

Objective 104 Math
IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties
SUB-CATEGORY: Identity Element

OBJECTIVE: Given multiplication problems which contain the identity element, the student will solve the problem.

SAMPLE ITEMS:

Find the missing term.

____ x 1 = 55

Answer: 55

ITEM 1

Find the missing term.

1 x ____ = 167

Answer: 167

ITEM 2

Find the missing term.

38 x ____ = 38

Answer: 1

ITEM 3

Find the missing term.

31 x ____ = 31

Answer: 1

ITEM 4

Objective 105 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Single-Digit Multiplication or Division

OBJECTIVE: Given any single-digit multiplication or division combination, the student will name the product or quotient.

SAMPLE ITEMS:

Find the product. $\begin{array}{r} 3 \\ \times 4 \\ \hline \end{array}$ Answer: 12 ITEM 1	Find the quotient. 6 ÷ 2 = ____ Answer: 3 ITEM 2
Find the product. $\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$ Answer: 35 ITEM 3	Find the quotient. 9 ÷ 3 = ____ Answer: 3 ITEM 4

Objective 106
IOX Acceptability Rating: 1

Math
Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Two Place Multiplication

OBJECTIVE: Given a multiplication problem of two factors between 10 and 100, the student will name the product using expanded notation.

SAMPLE ITEMS.

Name the products using expanded notation.

48 x 23 =

Answer:

48 x 23 = (40 + 8) x 23
= (40 x 23) +
(8 x 23)
= 920 + 184
= 1104

ITEM 1

Name the products using expanded notation.

67 x 54

Answer:

67 x 54 = (60 + 7) x 54
= (60x54) +
(7x54)
= 3240 + 378
= 3618

ITEM 2

Name the products using expanded notation.

35 x 42 =

Answer:

35 x 42 = (30 + 5) x 42
= (30 x 42) +
(5 x 42)
= 1260 + 210
= 1470

ITEM 3

Name the products using expanded notation.

19 x 65 =

Answer:

19 x 65 = (10 + 9) x 65
= (10 x 65) +
(9 x 65)
= 650 + 595
= 1245

ITEM 4

Objective 107 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Multiplication With Muliples of 10

OBJECTIVE: Given a multiplication problem in which both factors contain 10, 100, 1000, or other multiples of 10, the student will name the product.

SAMPLE ITEMS:

Find the product. 400 x 50 Answer: 20,000 ITEM 1	Find the product. 600 x400 Answer: 240,000 ITEM 2
Find the product. 3000 x 500 Answer: 1,500,000 ITEM 3	Find the product. 1000 x1000 Answer: 1,000,000 ITEM 4

Objective 108 | Math

IOX Acceptability Rating: 1 | Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Multiplicative Property of Zero

OBJECTIVE: Given a multiplication problem in which one of the factors is zero, the student will name the product.

SAMPLE ITEMS:

Name the product. 5 x 0 = ____ Answer: 0 ITEM 1	Name the product. 28 x 0 = ____ Answer: 0 ITEM 2
Name the product. 28 x 0 = Answer: 0 ITEM 3	Name the product. 316 x 0 = ____ Answer: 0 ITEM 4

Objective 109 — Math

IOX Acceptability Rating: 1 — Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Inverse Relationships

OBJECTIVE: Given a multiplication problem with a missing product or factor, the student will solve the problem.

SAMPLE ITEMS:

Find the missing term: ____ x 48 = 816 Answer: 17 ITEM 1	Find the missing term: 62 x 27 = ____ Answer: 1728 ITEM 2
Find the missing term: 5 x ____ = 100 Answer: 20 ITEM 3	Find the missing term: ____ x 7 = 77 Answer: 11 ITEM 4

Objective 110 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Commutative and Associative Properties of Multiplication.

OBJECTIVE: Given a multiplication problem with several factors, the student will name the product by using the Commutative and Associative Properties.

SAMPLE ITEMS:

Find the product by re-arranging the terms using the Commutative and Associative Properties. (4 x 359 x 25) = ____ Answer: (4 x 25) x 359 = 35,900 ITEM 1	Find the product by re-arranging the terms using the Commutative and Associative Properties. 250 x 627 x 4 = ____ Answer: (250) x 4) x 627 = 627,000 ITEM 2
Find the product by re-arranging the terms using the Commutative and Associative Properties. 2 x 16 x 5 = ____ Answer: (2 x 5) x 16 = 160 ITEM 3	Find the product by re-arranging the terms using the Commutative and Associative Properties. 5 x 37 x 20 = ____ Answer: (5 x 20) x 37 = 3,700 ITEM 4

Objective 111 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Multiplication - Associative Property

OBJECTIVE: Given a multiplication equation with more than two factors, the student will use the Associative Property to find the product.

SAMPLE ITEMS:

Use the Associative Property to find the product.

6 x 5 x 10 =

Answer:

6 x 5 x 10 = 6 x (5 x 10)
= (6 x 5) x 10
= 30 x 10
= 300

ITEM 1

Use the Associative Property to find the product.

4 x 3 x 2 =

Answer:

4 x 3 x 2 = 4 x (3 x 2)
= (4 x 3) x 2
= 12 x 2
= 24

ITEM 2

Use the Associative Property to find the product.

7 x 9 x 5 =

Answer:

7 x 9 x 5 = 7 x (9 x 5)
= (7 x 9) x 5
= 63 x 5
= 315

ITEM 3

Use the Associative Property to find the product.

3 x 8 x 4 =

Answer:

3 x 8 x 4 = 3 x (8 x 4)
= (3 x 8) x 4
= 24 x 4
= 96

ITEM 4

Objective 112 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Commutative Property - Multiplication

OBJECTIVE: Given a multiplication problem with two factors, the student will use the Commutative Property to rewrite the problem and name the product.

SAMPLE ITEMS:

Use the Commutative Property to rewrite the problem and name the product. 7 x 14 = Answer: 14 x 7 = 98 ITEM 1	Use the Commutative Property to rewrite the problem and name the product. 13 x 3 = Answer: 3 x 13 = 39 ITEM 2
Use the Commutative Property to rewrite the problem and name the product. 8 x 12 = Answer: 12 x 8 = 96 ITEM 3	Use the Commutative Property to rewrite the problem and name the product. 14 x 11 Answer: 11 x 14 = 154 ITEM 4

Objective 113 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Commutative property of Multiplication

OBJECTIVE: Given a multiplication problem and its product, the student will check the problem by reversing the order of the factors and multiplying again.

SAMPLE ITEMS:

Check by reversing the order of the factors. 16 x27 432 Answer: 27 x 16 = 432 ITEM 1	Check by reversing the order of the factors. 725 x302 218.950 Answer: 302 x 725 = 218,950 ITEM 2
Check by reversing the order of the factors. 64 x21 1344 Answer: 21 x 64 = 1344 ITEM 3	Check by reversing the order of the factors. 55 x71 3905 Answer: 71 x 55 = 3905 ITEM 4

Objective 114 — Math

IOX Acceptability Rating: 1 — Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Distributive Property

OBJECTIVE: Given a multiplication problem with two factors, the student will find the product by using the distributive property.

SAMPLE ITEMS:

Find the product by using the distributive property:

36 x 8 = ____

Answer:

(30 + 6) x 8 =

30(8) + 6(8) = 288.

ITEM 1

Find the product by using the distributive property:

42 x 7 ___

Answer:

(40 + 2) + 7 =

40(7) + 2(7) = 294

ITEM 2

Find the product by using the distributive property:

16 x 8 = ____

Answer:

(10 + 6) x 8 =
10(8) + 6(8) = 128

ITEM 3

Find the product by using the distributive property:

79 x 10 = ____

Answer:

(70 + 9) x 10 =
70(10) + 9(10) = 790

ITEM 4

Objective 115
IOX Acceptability Rating: 1

Math
Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Distributive Property of Multiplication Over Addition

OBJECTIVE: Given a multiplication problem with two factors, the student will use the distributive property to find the product.

SAMPLE ITEMS:

Use the distributive property to find the product.

6 x 23 =

Answer:

6 x 23 = 6 x (20 + 3)
= (6 x 20) + (6 x 3)
= 120 + 18
= 138

ITEM 1

Use the distributive property to find the product.

4 x 34 =

Answer:

4 x 34 = 4 x (30 + 4)
= (4 x 30) + (4 x 4)
= 120 + 16
= 136

ITEM 2

Use the distributive property to find the product.

5 x 16 =

Answer:

5 x 16 = 5 x (10 + 6)
= (5 x 10) + (5 x 6)
= 50 + 30
= 80

ITEM 3

Use the distributive property to find the product.

9 x 54 =

Answer:

9 x 54 = 9 x (50 + 4)
= (9 x 50) + (9 x 4)
= 450 + 36
= 486

ITEM 4

Objective 116 Math

IOX Acceptability Rating: 1 Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Distributive Property

OBJECTIVE: Given an expression of the form a(b + c), the student will evaluate it using the Distributive Property showing all the necessary steps.

SAMPLE ITEMS:

Evaluate the expression using the Distributive Property. Show the work steps that indicate you are using the Distributive Property.

Given: 5(3 + 6)

Answer:

$$\begin{aligned} 5 \times (3 + 6) &= (5 \times 3) + (5 \times 6) \\ &= 15 + 30 \\ &= 45 \end{aligned}$$

ITEM 1

Evaluate the expression using the Distributive Property. Show the work steps that indicate you are using the Distributive Property.

Given: 3(2 + 5)

Answer:

$$\begin{aligned} 3 \times (2 + 5) &= (3 \times 2) + (3 \times 5) \\ &= 6 + 15 \\ &= 21 \end{aligned}$$

ITEM 2

Evaluate the expression using the Distributive Property. Show the work steps that indicate you are using the Distributive Property.

Given: 4(2 + 2)

Answer:

$$\begin{aligned} 4 \times (2 + 2) &= (4 \times 2) + (4 \times 2) \\ &= 8 + 8 \\ &= 16 \end{aligned}$$

ITEM 3

Evaluate the expression using the Distributive Property. Show the work steps that indicate you are using the Distributive Property.

Given: 3(6 + 3)

Answer:

$$\begin{aligned} 3 \times (6 + 3) &= (3 \times 6) + (3 \times 3) \\ &= 18 + 9 \\ &= 27 \end{aligned}$$

ITEM 4

Objective 117 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Division--Identity Element

OBJECTIVE: Given a division problem which contains the identity element, the student will solve the problem.

SAMPLE ITEMS:

Solve the following problem:

$31 \div 1 = \underline{\quad}$

Answer: 31

ITEM 1

Solve the following problem:

$463 \div 463 = \underline{\quad}$

Answer: 1

ITEM 2

Solve the following problem:

$88 \div \underline{\quad} = 88$

Answer: 1

ITEM 3

Solve the following problem:

$167 \div 1 = \underline{\quad}$

Answer: 167

ITEM 4

Objective 118 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Operations and Their Properites

SUB-CATEGORY: Divisibility of 2, 3, 4, 5,..12

OBJECTIVE: Given a list of numbers, the student will circle the numbers divisible by 2, 3, 4, 5, ...12.

SAMPLE ITEMS:

Circle the number(s) divisible by 3.

13, 21, 16

Answer: 13, [✓ 21], 16

ITEM 1

Circle the number(s) divisible by 6.

15, 24, 438

Answer: 15, [✓ 24], [✓ 438]

ITEM 2

Circle the number(s) divisible by 9.

108, 72, 51

Answer: [✓ 108], [✓ 72], 51

ITEM 3

Circle the number(s) divisible by 12.

22, 48, 144

Answer: 22, [✓ 48], [✓ 144]

ITEM 4

Objective 119 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Inverse Relationship

OBJECTIVE: Given an equation which has a missing quotient, divisor, or dividend, the student will name the missing term.

SAMPLE ITEMS:

Find the missing term.

$\_\_\_ \div 48 = 17$

Answer: 816

ITEM 1

Find the missing term.

$64 \div \_\_\_ = 16$

Answer: 4

ITEM 2

Find the missing term.

$100 \div 5 = \_\_\_$

Answer: 20

ITEM 3

Find the missing term.

$\_\_\_ \div 7 = 11$

Answer: 77

ITEM 4

Objective 120

IOX Acceptability Rating: 1

Math

Grade 4-6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Division Using a Scaffold Method

OBJECTIVE: Given a division problem with a two-place division, the student will name the quotient using the scaffold method.

SAMPLE ITEMS:

Use the scaffold method to name the quotient.

$26\overline{)338}$

Answer:

$$\begin{array}{rrr} 26 & \overline{)338} & \\ & \underline{260} & \underline{10} \\ & 78 & \\ & \underline{78} & \underline{3} \\ & 0 & 13 \end{array}$$

ITEM 1

Use the scaffold methos to name the quotient.

$47\overline{)564}$

Answer:

$$\begin{array}{rrr} 47 & \overline{)564} & \\ & \underline{470} & \underline{10} \\ & 94 & \\ & \underline{94} & \underline{2} \\ & 0 & 12 \end{array}$$

ITEM 2

Use the scaffold method to name the quotient.

$36\overline{)504}$

Answer:

$$\begin{array}{rrr} 36 & \overline{504} & \\ & \underline{360} & \underline{10} \\ & 144 & \\ & \underline{144} & \underline{4} \\ & 0 & 14 \end{array}$$

ITEM 3

Use the scaffold method to name the quotient.

$53\overline{)901}$

Answer:

$$\begin{array}{rrr} 53 & \overline{901} & \\ & \underline{530} & \underline{10} \\ & 371 & \\ & \underline{371} & \underline{7} \\ & 0 & 17 \end{array}$$

ITEM 4

Objective 121 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Checking Division

OBJECTIVE: Given a division problem, the student will find the quotient and then multiply the divisor and the quotient to check the division.

SAMPLE ITEMS:

Find the quotient. Then check the work.

$23\overline{)575}$ check:

Answer:

$$\begin{array}{r} 25 \\ 23\overline{)575} \end{array}$$

check

$$\begin{array}{r} 25 \\ \times 23 \\ \hline 75 \\ 500 \\ \hline 575 \end{array}$$

ITEM 1

Find the quotient. Then check the work.

$32\overline{)576}$ check:

Answer:

$$\begin{array}{r} 18 \\ 32\overline{)576} \end{array}$$

check

$$\begin{array}{r} 18 \\ \times 32 \\ \hline 36 \\ 540 \\ \hline 576 \end{array}$$

ITEM 2

Find the quotient. Then check the work.

$48\overline{)528}$ check:

Answer:

$$\begin{array}{r} 11 \\ 48\overline{)528} \end{array}$$

check

$$\begin{array}{r} 48 \\ \times 11 \\ \hline 48 \\ 48 \\ \hline 528 \end{array}$$

ITEM 3

Find the quotient. Then check the work.

$53\overline{)689}$ check:

Answer:

$$\begin{array}{r} 13 \\ 53\overline{)689} \end{array}$$

check

$$\begin{array}{r} 53 \\ \times 13 \\ \hline 159 \\ 53 \\ \hline 689 \end{array}$$

ITEM 4

Objective 122 | Math
IOX Acceptability Rating: 1 | Grade 4 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Multiplication and Division as Inverse Operations

OBJECTIVE: Given a problem in multiplication and a related division proglem, the student will name the missing product and the missing factor.

SAMPLE ITEMS:

Solve the following problem.

3 x 6 = ____,
18 ÷ ____ = 3

Answer: 18, 6

ITEM 1

Solve the following problem.

6 x 10 = ____,
60 ÷ 10 = ____

Answer: 60, 6

ITEM 2

Solve the following problem.

15 x 5 = ____,
75 ÷ ____ = 5

Answer: 75, 15

ITEM 3

Solve the following problem.

14 x 3 = ____,
42 ÷ ____ = 14

Answer: 42, 3

ITEM 4

Objective 123 | Math
IOX Acceptability Rating: 1 | Grade 5 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Identity Element for Multiplication

OBJECTIVE: Given a multiplication problem with two factors, one of which is either the number one or a fraction equal to the number one, the student will name the product.

SAMPLE ITEMS:

Find the product. $\frac{5}{5} \times \frac{3}{7} =$ Answer: $\frac{3}{7}$ ITEM 1	Find the product. $6 \times 1 =$ Answer: 6 ITEM 2
Find the product. $\frac{4}{5} \times 1 =$ Answer: $\frac{4}{5}$ ITEM 3	Find the product. $5 \times \frac{3}{3} =$ Answer: 5 ITEM 4

Objective 124 Math

IOX Acceptability Rating: 1 Grade 5 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Multiplicative Property of Zero

OBJECTIVE:	Given a division problem which contains the element zero as a factor or dividend, the student will solve it.

SAMPLE ITEMS:

Find the missing term. 0 ÷ 25 = ____ Answer: 0 ITEM 1	Find the missing term. 0 ÷ 164 = ____ Answer: 0 ITEM 2
Find the missing term. 0 ÷ 23 = ____ Answer: 0 ITEM 3	Find the missing term. 0 ÷ 6 = ____ Answer: 0 ITEM 4

Objective 125

IOX Acceptability Rating: 1

Math

Grade 5-6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Distributive Property Of Multiplication Over Addition

OBJECTIVE: Given a multiplication problem containing whole and rational numbers, the student will name the product by using the distributive principle and state it in its simplest form.

SAMPLE ITEMS:

Find the product by using the distributive principle. 5 1/2 x 3 = Answer: (5 x 3) + (1/2 x 3) = 15 + 1 1/2 = 16 1/2 ITEM 1	Find the product by using the distributive principle. 6 x 2 1/5 = Answer: (6 x 2) + (6 x 1/5)= 12 + 1 1/5 = 13 1/5 ITEM 2
Find the product by using the distributive principle. 1/2 x 3 1/7 = Answer: (1/2 x 3) + (1/2 x 1/7) = 1 1/2 + 1/14 = 1 4/7 ITEM 3	Find the product by using the distributive principle. 3/5 x 5 2/3 = Answer: (3/5 x 5) + (3/5 x 2/3) = 3 + 2/5 = 3 2/5 ITEM 4

Objective 126 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Operations and Their Properities

SUB-CATEGORY: Long Division

OBJECTIVE: Given a division problem in which the dividend is a five-digit numeral and the divisor is a two-digit numeral, the student will name the quotient with or without a remainder.

SAMPLE ITEMS:

Find the quotient. $47\overline{)43{,}596}$ Answer: 927 R. 27 ITEM 1	Find the quotient. $20\overline{)40{,}260}$ Answer: 2013 ITEM 2
Find the quotient. $15\overline{)82{,}611}$ Answer: 5507 R. 5 ITEM 3	Find the quotient. $23\overline{)46{,}954}$ Answer: 2041 R. 11 ITEM 4

Objective 127 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Multiplicative Property of Zero

OBJECTIVE: Given a division problem with a divisor of zero, the student will show that the problem has no solution by using repeated subtraction or the inverse relationship.

SAMPLE ITEM:

Show there is no solution to this problem.

$0\overline{)15}$

Answer: "No Number" x 0 = 15

$$\begin{array}{r} 0\overline{)15} \\ -0 \\ \hline 15 \\ -0 \\ \hline 15\ldots \end{array}$$

ITEM 1

Show there is no solution to this problem.

$0\overline{)49}$

Answer: "No Number" x 0 = 49

$$\begin{array}{r} 0\overline{)49} \\ -0 \\ \hline 49 \\ -0 \\ \hline 49\ldots \end{array}$$

ITEM 2

Show there is no solution to this problem.

$0\overline{)7}$

Answer: "No Number" x 0 = 7

$$\begin{array}{r} 0\overline{)7} \\ -0 \\ \hline 7 \\ -0 \\ \hline 7\ldots \end{array}$$

ITEM 3

Show there is no solution to this problem.

$0\overline{)105}$

Answer: "No Number" x 0 = 105

$$\begin{array}{r} 0\overline{)105} \\ -\ 0 \\ \hline 105 \\ -\ 0 \\ \hline 105\ldots \end{array}$$

ITEM 4

Objective 128 | Math

IOX Acceptability Rating: 1 | Grade 5-6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Long Division

OBJECTIVE: Given a divison problem of which the quotient contains a remainder, the student will find the quotient and write it as a mixed number.

SAMPLE ITEMS:

Find the quotient. $23\overline{)678}$ Answer: 29 11/23 ITEM 1	Find the quotient. $29\overline{)7205}$ Answer: 248 13/29 ITEM 2
Find the quotient. $8\overline{)521}$ Answer: 65 1/8 ITEM 3	Find the quotient. $13\overline{)6,427}$ Answer: 494 5/13 ITEM 4

Objective 129 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Identity Element For Multiplication

OBJECTIVE: Given a fraction, the student will rename it by multiplying it by another fraction which is equal to the number one.

SAMPLE ITEMS:

Rename this fraction, making the new denominator 6. 2/3 Answer: $\frac{2}{3} \times \frac{2}{2} = \frac{4}{6}$ ITEM 1	Rename this fraction, making the new denominator 9. 2/3 Answer: $\frac{2}{3} \times \frac{3}{3} = \frac{6}{9}$ ITEM 2
Rename this fraction, making the new denominator 30. 1/6 Answer: $\frac{1}{6} \times \frac{5}{5} = \frac{5}{30}$ ITEM 3	Rename this fraction, making the new denominator 20. 4/5 Answer: $\frac{4}{5} \times \frac{4}{4} = \frac{16}{20}$ ITEM 4

Objective 130
IOX Acceptability Rating: 1

Math
Grade 5-6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Multiplicative Inverse

OBJECTIVE: Given a set of rational numbers, the student will find their reciprocal.

SAMPLE ITEMS:

Name the reciprocal. $\frac{3}{13}$ Answer: $\frac{13}{3}$ ITEM 1	Name the reciprocal. $\frac{7}{9}$ Answer: $\frac{9}{7}$ ITEM 2
Name the reciprocal. $\frac{2}{6}$ Answer: $\frac{6}{2}$ ITEM 3	Name the reciprocal. $\frac{1}{9}$ Answer: 9 ITEM 4

Objective 131 Math

IOX Acceptability Rating: 1 Grade 5 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Multiplicative Inverses (Reciprocals)

OBJECTIVE: Given a multiplication problem composed of two factors which are reciprocals, the student will name the product.

SAMPLE ITEMS:

Find the product. $\frac{2}{3} \times \frac{3}{2} =$ Answer: 1 ITEM 1	Find the product. $\frac{1}{5} \times 5 =$ Answer: 1 ITEM 2
Find the product. $\frac{7}{9} \times \frac{9}{7} =$ Answer: 1 ITEM 3	Find the product. $\frac{9}{2} \times \frac{2}{9} =$ Answer: 1 ITEM 4

Objective 132 Math

IOX Acceptability Rating: 1 Grade 5 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Inverse Relationship

OBJECTIVE: Given a multiplication problem with a missing fractional factor, the student will find the missing factor.

SAMPLE ITEMS:

Find the missing factor.

$\frac{1}{3} \times \underline{\hspace{2em}} = \frac{2}{15}$

Answer: $\frac{2}{5}$

ITEM 1

Find the missing factor.

$\underline{\hspace{2em}} \times \frac{3}{8} = \frac{5}{9}$

Answer: $\frac{40}{27}$

ITEM 2

Find the missing factor.

$\underline{\hspace{2em}} \times \frac{4}{5} = \frac{3}{10}$

Answer: $\frac{3}{8}$

ITEM 3

Find the missing factor.

$\frac{1}{2} \times \underline{\hspace{2em}} = \frac{5}{8}$

Answer: $\frac{10}{8}$

ITEM 4

Objective 133

IOX Acceptability Rating: 1

Math

Grade 5 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Fraction Notation - Multiplication

OBJECTIVE: Given a multiplication problem with one factor as a mixed number, the student will find the product and express it in simplest term.

SAMPLE ITEMS:

Find the product by renaming factors as improper fractions. $3\frac{1}{2} \times \frac{4}{5} =$ Answer: $\frac{7}{2} \times \frac{4}{5} = \frac{28}{10} = 2\frac{4}{5}$ ITEM 1	Find the product by renaming factors as improper fractions. $4 \times 2\frac{1}{3}$ Answer: $4 \times \frac{7}{3} = \frac{28}{3} = 9\frac{1}{3}$ ITEM 2
Find the product by renaming factors as improper fractions. $5\frac{1}{9} \times \frac{1}{2} =$ Answer: $\frac{46}{9} \times \frac{1}{2} = \frac{23}{9} = 2\frac{5}{9}$ ITEM 3	Find the product by renaming factors as improper fractions. $2\frac{1}{3} \times 3\frac{1}{6}$ Answer: $\frac{7}{3} \times \frac{19}{6} = \frac{133}{18} = 7\frac{7}{18}$ ITEM 4

Objective 134 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Multiplication of Whole Numbers Times a Fraction

OBJECTIVE: Given a multiplication problem in which one factor is a whole number and the other is a fraction, the student will find the product.

SAMPLE ITEMS:

Find the product. $1/3 \times 6 =$ Answer: 2 ITEM 1	Find the product. $1/6 \times 18 =$ Answer: 3 ITEM 2
Find the product. $2/5 \times 10 =$ Answer: 4 ITEM 3	Find the product. $\frac{3}{4} \times 16$ Answer: 12 ITEM 4

Objective 135 Math

IOX Acceptability Rating: 1 Grade 5 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Division of Fractions

OBJECTIVE: Given a fractional division problem, the student will solve it and state its answer in its simplest form.

SAMPLE ITEMS:

Solve the division problem.

$\frac{3}{4} \div \frac{2}{5} =$

Answer:

$\frac{3}{4} \div \frac{2}{5} =$

$\frac{3}{4} \times \frac{5}{2} = \frac{15}{8} = 1\frac{7}{8}$

ITEM 1

Solve the division problem.

$\frac{4}{5} \div \frac{2}{3} =$

Answer:

$\frac{4}{5} \div \frac{2}{3} =$

$\frac{4}{5} \times \frac{3}{2} = \frac{6}{5} = 1\frac{1}{5}$

ITEM 2

Solve the division problem.

$\frac{6}{7} \div \frac{3}{14} =$

Answer:

$\frac{6}{7} \div \frac{3}{14} =$

$\frac{6}{7} \times \frac{14}{3} = 4$

ITEM 3

Solve the division problem.

$\frac{9}{13} \div \frac{2}{3} =$

Answer:

$\frac{9}{13} \div \frac{2}{3} =$

$\frac{9}{13} \times \frac{3}{2} = \frac{27}{26} = 1\frac{1}{26}$

ITEM 4

Objective 136 Math

IOX Acceptability Rating: 1 Grade 5 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Division of Fractions

OBJECTIVE: Given a division problem in which either the divisor or the dividend or both are proper fractions, the student will find the quotient and express it in simplest terms.

SAMPLE ITEMS:

Find the quotient. $\frac{3}{5} \div \frac{7}{8} =$ Answer: $\frac{24}{35}$ ITEM 1	Find the quotient. $\frac{7}{8} \div 8 =$ Answer: $\frac{7}{64}$ ITEM 2
Find the quotient. $\frac{2}{5} \div \frac{7}{9} =$ Answer: $\frac{18}{35}$ ITEM 3	Find the quotient. $\frac{1}{5} \div \frac{1}{6} =$ Answer: $1\frac{1}{5}$ ITEM 4

Objective 137 Math

IOX Acceptability Rating: 1 Grade 5 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Inverse Relationship

OBJECTIVE: Given a division problem with a missing factor, the student will find the missing factor.

SAMPLE ITEMS:

Find the missing term.

$\frac{1}{2} \div \_\_\_ = \frac{7}{8}$

Answer: $\frac{4}{7}$

ITEM 1

Find the missing term.

$\frac{5}{9} \div \_\_\_ = \frac{40}{27}$

Answer: $\frac{3}{8}$

ITEM 2

Find the missing term.

$\frac{2}{7} \div \_\_\_ = \frac{3}{4}$

Answer: $\frac{8}{21}$

ITEM 3

Find the missing term.

$\_\_\_ \div \frac{1}{5} = \frac{4}{11}$

Answer: $\frac{4}{55}$

ITEM 4

Objective 138 Math

IOX Acceptability Rating: 1 Grade 5 - 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Fraction Division

OBJECTIVE: Given a division problem in which either the divisor or the dividend or both are mixed fractions, the student will find the quotient by renaming a mixed fraction as an improper fraction and then dividing.

SAMPLE ITEMS:

Find the quotient by renaming the factors as improper fractions.

$7\frac{2}{3} \div 5\frac{1}{8} =$

Answer:

$\frac{23}{3} \div \frac{41}{8} = 1\frac{61}{123}$

ITEM 1

Find the quotient by renaming the factors as improper fractions.

$4 \div 2\frac{1}{2} =$

Answer:

$4 \div \frac{5}{2} = 1\frac{3}{5}$

ITEM 2

Find the quotient by renaming the factors as improper fractions.

$\frac{1}{3} \div 3\frac{5}{8} =$

Answer:

$\frac{1}{3} \div \frac{29}{8} = \frac{8}{87}$

ITEM 3

Find the quotient by renaming the factors as improper fractions.

$5\frac{1}{5} \div 2 =$

Answer:

$\frac{26}{5} \div 2 = 2\frac{3}{5}$

ITEM 4

Objective 139 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Operations and Their Properties

SUB-CATEGORY: Multiplication of Fractions

OBJECTIVE: Given a multiplication problem with two or more fractional factors, the student will re-arrange the factors to find the product and state it in its simplest form.

SAMPLE ITEMS:

Re-arrange the factors to find the product and then state it in its simplest form.

$$\frac{14}{15} \times \frac{12}{35} = \_\_\_$$

Answer: $\frac{14 \times 12}{15 \times 35} = \frac{14}{35} \times \frac{12}{15}$

$= \frac{2}{5} \times \frac{4}{5}$

$= \frac{8}{25}$

ITEM 1

Re-arrange the factors to find the product and then state it in its simplest form.

$$\frac{16}{22} \times \frac{11}{56} = \_\_\_$$

Answer: $\frac{16 \times 11}{22 \times 56} = \frac{16}{56} \times \frac{11}{22}$

$= \frac{2}{7} \times \frac{1}{2}$

$= \frac{1}{7}$

ITEM 2

Re-arrang the factors to find the product and then state it in its simplest form.

$$\frac{27}{36} \times \frac{12}{45} =$$

Answer: $\frac{27 \times 12}{36 \times 45} = \frac{12}{36} \times \frac{27}{45}$

$= \frac{1}{3} \times \frac{3}{5}$

$= \frac{1}{5}$

ITEM 3

Re-arrange the factors to find the product and then state it in its simplest form.

$$\frac{24}{49} \times \frac{21}{48} =$$

Answer: $\frac{24 \times 21}{49 \times 48} = \frac{21}{49} \times \frac{24}{48}$

$= \frac{3}{7} \times \frac{1}{2}$

$= \frac{3}{14}$

ITEM 4

Objective 140 Math

IOX Acceptability Rating: 1 Grade 4

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Money--Dollar sign, Cent sign, Decimal point

OBJECTIVE: Given a group of numerals used as cents, the student will write each one as dollars and cents or as cents using the dollar sign and decimal point.

SAMPLE ITEMS:

Write the following as dollars and cents, or cents using the dollar sign and decimal point. 250 cents Answer: $2.50 ITEM 1	Write the following as dollars and cents, or cents using the dollar sign and decimal point. 66 cents Answer: $ .66 or 66¢ ITEM 2
Write the following as dollars and cents, or cents using the dollar sign and decimal point. 1,223 cents Answer: $12.23 ITEM 3	Write the following as dollars and cents, or cents using the dollar sign and decimal point. 8 cents Answer: $ .08 or 8¢ ITEM 4

Objective 141

IOX Acceptability Rating: 1

Math

Grade 4

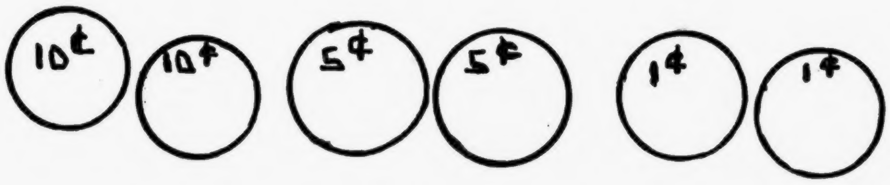
MAJOR CATEGORY: Measurement

SUB-CATEGORY: Money--Counting

OBJECTIVE: Given pictures of sets of mixed coins and paper money, the student will determine the value of each set and place the amount next to the picture.

SAMPLE ITEMS:

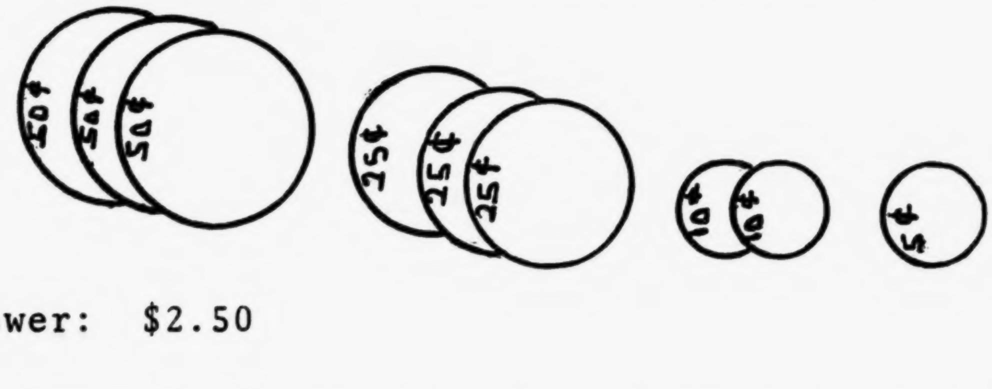
Write the total amount of money in the set.



Answer: $ .32 or 32¢

ITEM 1

Write the total amount of money in the set.



Answer: $2.50

ITEM 2

Objective 142 Math

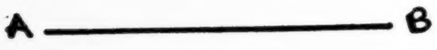
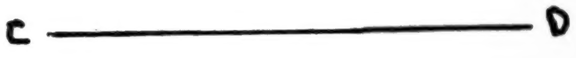
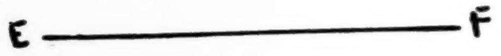
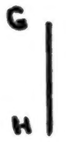
IOX Acceptability Rating: 1 Grade 4

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Approximation

OBJECTIVE: Given a group of line segments, the student will measure them to the nearest 1/2, 1/4, or 1/8 inch.

SAMPLE ITEMS:

Measure the following line segment to the nearest 1/2 inch.  Answer: 1½" ITEM 1	Measure the following line segment to the nearest 1/4 inch.  Answer: 2¼" ITEM 2
Measure the following line segment to the nearest 1/8 inch.  Answer: 1⅞" ITEM 3	Measure the following line segment to the nearest 1/2 inch.  Answer: ½" ITEM 4

Objective 143

IOX Acceptability Rating: 1

Math

Grade 4

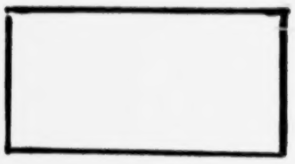
MAJOR CATEGORY: Measurement

SUB-CATEGORY: Width

OBJECTIVE: Given a geometric figure, the student will be able to identify which dimension is the width, and measure it.

SAMPLE ITEMS:

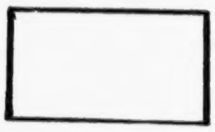
Measure the width of the rectangle below.



Answer: $\frac{5}{8}$"

ITEM 1

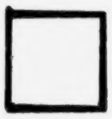
Measure the width of the rectangle below.



Answer: $\frac{1}{2}$"

ITEM 2

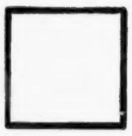
Measure the width of the square below.



Answer: $\frac{7}{16}$"

ITEM 3

Measure the width of the square below.



Answer: $\frac{11}{32}$"

ITEM 4

Objective 144 Math

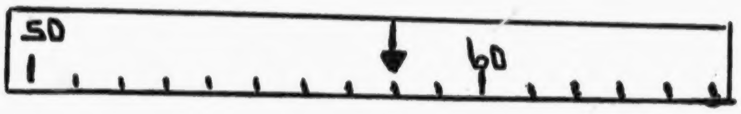
IOX Acceptability Rating: 1 Grade 4

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Weight

OBJECTIVE: Given a picture of a scale, the student will read an indicated weight on it.

SAMPLE ITEMS: Read the weight of the scale and answer the question.

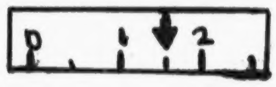


BATHROOM SCALE IN POUNDS

What is the weight of this child in pounds?

Answer: 58 pounds

ITEM 1

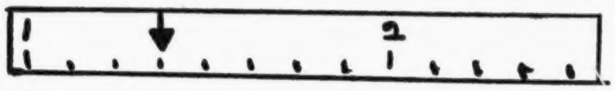


LETTER SCALE IN OUNCES

How many ounces does this letter weigh?

Answer: 1 1/2 ounces

ITEM 2

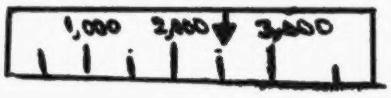


MEAT SCALE IN POUNDS & OUNCES

How many ounces does the chicken weigh?

Answer: 22 ounces

ITEM 3



How many tons does the truck weigh?

Answer: 1 1/2 tons

ITEM 4

Objective 145 | Math

IOX Acceptability Rating: 1 | Grade 4-6

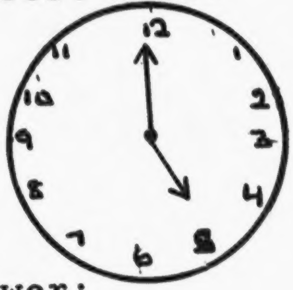
MAJOR CATEGORY: Measurement

SUB-CATEGORY: Time

OBJECTIVE: Given a clock face with an indicated time on it, the student will read it to the nearest hour and minute.

SAMPLE ITEMS:

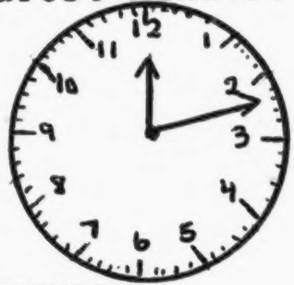
Tell the time to the nearest hour.


12
1
2
3
4
5
6
7
8
9
10
11

Answer: 5:00

ITEM 1

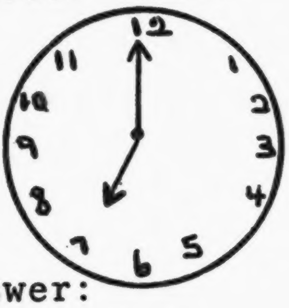
Tell the time to the nearest minute.


12
1
2
3
4
5
6
7
8
9
10
11

Answer: 12:12

ITEM 2

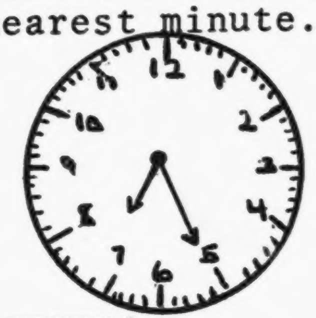
Tell the time to the nearest hour.


12
1
2
3
4
5
6
7
8
9
10
11

Answer: 7:00

ITEM 3

Tell the time to the nearest minute.


12
1
2
3
4
5
6
7
8
9
10
11

Answer: 7:25

ITEM 4

Objective 146
IOX Acceptability Rating: 1

Math
Grade 4 - 6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Money: Value (dollars, coins)

OBJECTIVE: Given an incomplete table involving the value of money, the student will complete it so that it shows the value of the coins and the one-dollar bill.

SAMPLE ITEM: Complete the following table so that it shows the value of the coins and the one-dollar bill.

A. 1 dollar is worth:

_______cents; ____quarters;____dimes;

______nickels

B. A half-dollar is worth:

___cents; ___quarters;___dimes:

___nickels

C. A quarter is worth:

___cents; ___nickels

D. A nickel is worth:

___cents

Answers:
A: 100; 4; 10; 20
B: 50; 2; 5; 10
C: 25; 5
D: 10; 2

ITEM 1

Objective 147

IOX Acceptability Rating: 1

Math

Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Length: Instruments and Units

OBJECTIVE: Given a list of measuring instruments and units of measure, the student will match them with an appropriate definition.

SAMPLE ITEM: Draw a line from each term in column I to the best definition for it in column II.

1. yardstick
2. scale
3. inch
4. ruler
5. yard
6. mile

1. the marks and numerals on a measuring tool.
2. a tool with a scale used to measure
3. 1/12 of a foot
4. a measuring tool 3 feet long.
5. 3 feet
6. 1/4 of a yard
7. 5,280 feet

Answers: 1 = 4; 2 = 1; 3 = 3; 4 = 2; 5 = 5; 6 = 7

ITEM 1

Objective 148 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Liquid

OBJECTIVE: Given two columns of measurements, the student will match column I with an equivalent measure in column II.

SAMPLE ITEM: Use lines to match the items in column I with the best item in column II.

Column I	Column II
1. cup	A. 4 quarts
2. pint	B. 32 fluid ounces
3. quart	C. 7 ounces
4. gallon	D. 4 ounces
5. 1-1/2 pints	E. 3 cups
6. 1/2 cup	F. 1/2 quarts
	G. 1/2 pint

Answer: 1 = G; 2 = F; 3 = B; 4 = A; 5 = E; 6 = D

ITEM 1

Objective 149 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Dry Measures

OBJECTIVE: Given a column of dry measures, the student will match each one with an equivalent one in another column.

SAMPLE ITEMS:

ITEM 1 Match column I with column II with lines.

I		II	
1.	bushel	A.	8 quarts
2.	peck	B.	1/4 quart
3.	quart	C.	1 gallon
4.	pint	D.	1/8 peck
		E.	4 pecks

Answer: 1. E
2. A
3. D
4. B

ITEM 1

Objective 150 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Metric System

OBJECTIVE: Given a group of incomplete statements involving the metric system of measurement, the student will complete them using the table available.

SAMPLE ITEM:

Complete the following statement using the table available.

3 quarts is about _____ liters.

Answer: 3

ITEM 1

Complete the following statement using the table available.

4 inches is about _____ centimeters.

Answer: 10

ITEM 2

Complete the following statement using the table available.

32 liters is about _____ gallons.

Answer: 8

ITEM 3

Complete the following statement using the table available.

6 inches is about _____ centimeters.

Answer: 15

ITEM 4

Objective 151

IOX Acceptability Rating: 1

Math

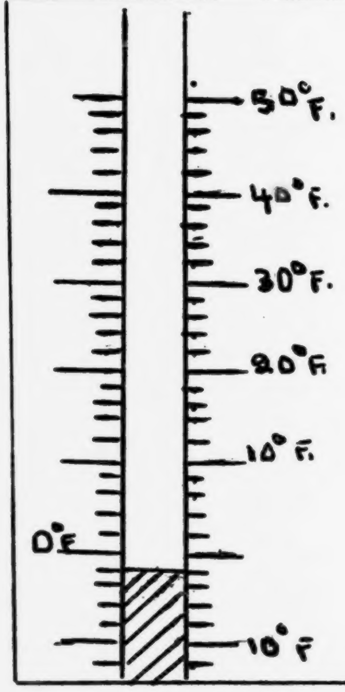
Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Temperature

OBJECTIVE: Given a representation of a thermometer with an indicated temperature, the student will answer questions involving the concepts of degree, boiling point, freezing point, and zero.

SAMPLE ITEMS:



Use the picture of a thermometer to help you answer the following:

A. If the temperature raises 23 degrees, what is the new temperature?

B. Does the thermometer show a temperature cooler or warmer than the freezing point of water? How much?

Answer: A. 21°

B. cooler, 34°

ITEM 1

Objective 152 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Adding Measures

OBJECTIVE: Given an addition problem involving measurements, the student will express the answer in the simplest way.

SAMPLE ITEMS:

Name the sum in the simplest way.

$$\begin{array}{rr} \text{yd.} & \text{ft.} \\ 3 & 1 \\ +\ 5 & 2 \\ \hline \end{array}$$

Answer: 9 yd.

ITEM 1

Name the sum in the simplest way.

$$\begin{array}{rrr} \text{gal.} & \text{qt.} & \text{pt.} \\ 2 & 3 & 1 \\ +\ 2 & 4 & 1 \\ \hline \end{array}$$

Answer: 6 gal.

ITEM 2

Name the sum in the simplest way.

$$\begin{array}{rrr} \text{hr.} & \text{min.} & \text{sec.} \\ 6 & 37 & 49 \\ +\ 2 & 46 & 52 \\ \hline \end{array}$$

Answer: 3 hr. 50 min.
57 sec

ITEM 3

Name the sum in the simplest way.

$$\begin{array}{rr} \text{lb.} & \text{oz.} \\ 3 & 10 \\ +\ 1 & 6 \\ \hline \end{array}$$

Answer: 5 lb.

ITEM 4

Objective 153 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Subtracting Measures

OBJECTIVE: Given a subtraction problem with measures, the student will express the answer in the simplest form.

SAMPLE ITEMS:

Subtract the measures and give the answer in the simplest form.

	ft.	in.
	4	10
-	2	7

Answer: 2 ft. 3 in.

ITEM 1

Subtract the measures and give the answer in the simplest form.

	gal.	qt.	pt.
	4	1	1
-	2	3	1

Answer: 1 gal. 2 qt.

ITEM 2

Subtract the measures and give the answer in the simplest form.

	lb.	oz.
	4	8
-		12

Answer: 3 lb. 12 oz.

ITEM 3

Subtract the measures and give the answer in the simplest form.

	hr.	min.	sec.
	5	16	10
-	2	45	30

Answer: 2 hr. 30 min. 40 sec.

ITEM 4

Objective 154 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Multiplication--Standard Units

OBJECTIVE: Given a multiplication example with specific units of measure, the student will name the product in simple form.

SAMPLE ITEMS:

Name the product in simplest form.

3 x 4 hr. 25 min. = N

Answer: 13 hr. 15 min.
or
13 1/4 hr.

ITEM 1

Name the product in simplest form.

6 x 2 wk. 3 days = N

Answer: 14 wk. 4 days
or
14 4/7 wk.

ITEM 2

Name the product in simplest form.

4 x 2 mo. 3 wk = N

Answer: 5 mo.

ITEM 3

Name the product in simplest form.

7 x 30 min. 15 sec.= N

Answer: 211 min. 45 sec.
or 211 $\frac{3}{4}$ min.
or 3 hr. 31 $\frac{3}{4}$ min.

ITEM 4

Objective 155

IOX Acceptability Rating: 1

Math

Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Division--Standard Units

OBJECTIVE: Given a division example with specific units of measure, the student will name the quotient in simplest form.

SAMPLE ITEMS:

Name the quotient in simplest form. 23 yd. 1 ft. ÷ 5 = N Answer: 4 2/3 yd. or 4 yd. 2 ft. ITEM 1	Name the quotient in simplest form. 10 gal. ÷ 2 1/2 = N Answer: 4 gal. ITEM 2
Name the quotient in simplest form. 78 in. ÷ 3 = N Answer: 26 in. or 2 ft. 2 in. ITEM 3	Name the quotient in simplest form. 15 lb. 14 oz. ÷ 5 Answer: 3 lb. $2\frac{4}{5}$ oz. ITEM 4

Objective 156 Math

IOX Acceptability Rating: 1 Grade 4-6

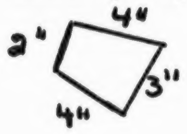
MAJOR CATEGORY: Measurement

SUB-CATEGORY: Perimeter--Polygons

OBJECTIVE: Given the length of its sides, the student will determine the perimeter of any polygon.

SAMPLE ITEMS:

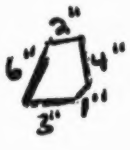
Determine the perimeter of this polygon.



Answer: P = 13"

ITEM 1

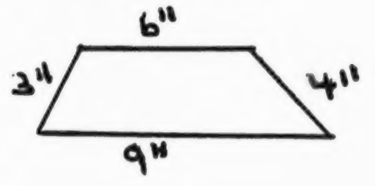
Determine the perimeter of this polygon.



Answer: P = 16"

ITEM 2

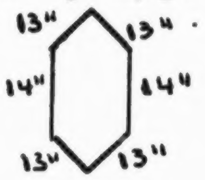
Determine the perimeter of this polygon.



Answer: P = 12"

ITEM 3

Determine the perimeter of this polygon.



Answer: P = 80in.

ITEM 4

Objective 157 Math

IOX Acceptability Rating: 1 Grade 4-6

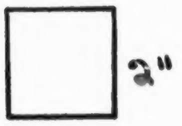
MAJOR CATEGORY: Measurement

SUB-CATEGORY: Area

OBJECTIVE: Given a polygon, the student will find its area.

SAMPLE ITEMS:

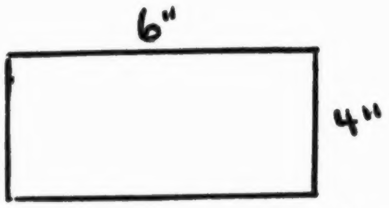
Find the area of the polygon below.



Answer: 4 sq. inches

ITEM 1

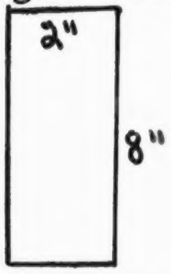
Find the area of the polygon below.



Answer: 24 sq. inches

ITEM 2

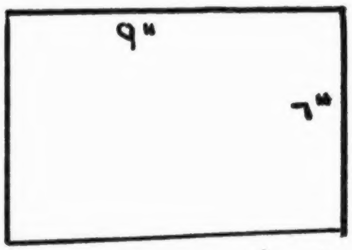
Find the area of the polygon below.



Answer: 16 sq inches

ITEM 3

Find the area of the polygon below.



Answer: 63 sq inches

ITEM 4

Objective 158 Math

IOX Acceptability Rating: 1 Grade 4-6

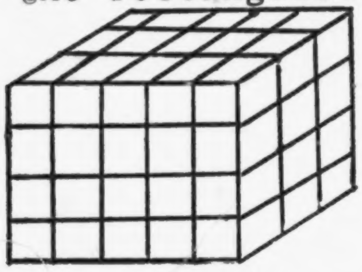
MAJOR CATEGORY: Measurement

SUB-CATEGORY: Volumes of Rectangular Prisms

OBJECTIVE: Given a rectangular prism in units, the student will give the number of units in each rectangular prism.

SAMPLE ITEMS:

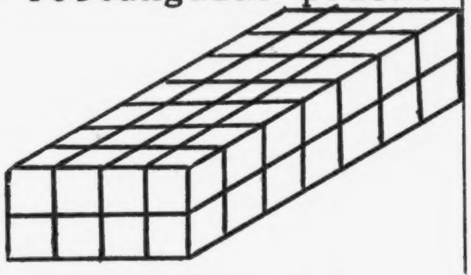
Name the volume in units for the rectangular prism.



Answer: (5 x 4) x 3 =
60 cubic units

ITEM 1

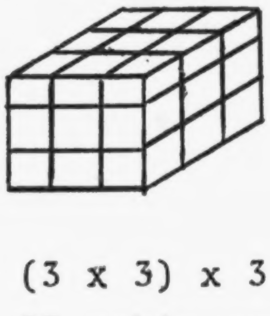
Name the volume in units for the rectangular prism.



Answer: (7 x 4) x 2 =
56 cubic units

ITEM 2

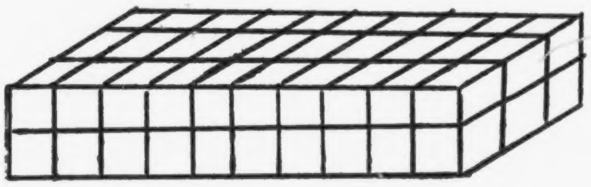
Name the volume in units for the rectangular prism.



Answer: (3 x 3) x 3 =
27 cubic units

ITEM 3

Name the volume in units for the rectangular prism.



Answer: (10 x 3) x 2 =
60 cubic units

ITEM 4

Objective 159 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Volume--Cubes and Rectangular Prisms

OBJECTIVE: Given the measures of a model of a cube or a rectangular prism, the student will find the volume.

SAMPLE ITEMS:

Find the volume of the following cube.

Length: 8 units
Width: 8 units
Height: 8 units

Answer: 512 units

ITEM 1

Find the volume of the following rectangular prism.

Length: 7 units
Width: 5 units
Height: 4 units

Answer: 140 units

ITEM 2

Find the volume of the following rectangular prism.

Length: 6 units
Width: 4 units
Height: 2 units

Answer: 48 units

ITEM 3

Find the volume of the following cube.

Length: 6 units
Width: 6 units
Height: 6 units

Answer: 216 units

ITEM 4

Objective 160 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Time

OBJECTIVE: Given a word problem involving time, the student will solve it.

SAMPLE ITEMS:

ITEM 1: Joe's plane left San Francisco at 11:30 A.M. and arrived in Los Angeles at 12:15 P.M. How long was the plane flight?

Answer: 45 minutes

ITEM 1

ITEM 2: Ron left Los Angeles at 8:00 A. M. and arrived in San Diego 2-1/2 hours later. At what time did he arrive in San Diego?

Answer: 10:30 A.M.

ITEM 2

ITEM 3: Yuriko's plane left Los Angeles at 7:00 A.M. and arrived in Honolulu 5 hours and 14 minutes later. At what time did she arrive in Honolulu?

Answer: 12:14 P.M.

ITEM 3

ITEM 4: Diane's train left Las Vegas at 9:00 A.M. and arrived in Los Angeles at 1:20 P.M. At what time was she half-way between Las Vegas and Los Angeles?

Answer: 11:10 P.M.

ITEM 4

Objective 161 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Dry Measures

OBJECTIVE: Given a word problem involving dry measures, the student will solve it using equation form.

SAMPLE ITEMS:

Read the problem, write an equation for it, and solve.

Melinda made a mixture of 5 cups of beads, 3 cups of sand, and 5 cups of sea shells for a mosaic design. How many ounces were there in the mixture.

Answer: 5 c. + 3 c. + 5 c. = 13 c.
13 c. x 8 = 104 oz.

ITEM 1

Read the problem, write an equation for it, and solve.

Ruth made a party mix of 1 cup Rice Chex, 1 cup Corn Chex, and 1 cup peanuts. How many ounces were there in the mix?

Answer: 1 c. + 1 c. + 1 c. = 3 c.
3 c. x 8 = 24 oz.

ITEM 2

Read the problem, write an equation for it, and solve.

Ken needed 10 cups of detergent to get his football uniform clean. How many ounces of detergent did he use?

Answer: 10 c. x 8 = 80 oz.

ITEM 3

Objective 162 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Area

OBJECTIVE: Given a word problem involving area, the student will solve it.

SAMPLE ITEMS:

ITEM 1 Ted needs wood to make a skate board 42 inches long and 1 1/2 feet wide. What is the area of the board he will buy?

Answer: 63 sq. in.

ITEM 1

ITEM 2 Rick needs a piece of plastic to cover a chess board 8 inches long and 8 inches wide. What is the area of the piece of plastic he will buy?

Answer: 64 sq. in.

ITEM 2

ITEM 3 Julie needs a rectangular piece of cloth 12 inches long and 3 1/2 inches wide to make a sash for her new slacks outfit. What is the area of the cloth she will buy?

Answer: 42 sq. in.

ITEM 3

ITEM 4 Marlys needs a rectangular piece of silk 36 inches long and 12 1/4 inches wide to make a scarf to wear in her new convertible. What is the area of the piece of silk she will buy?

Answer: 441 sq. in.

ITEM 4

Objective 163

IOX Acceptability Rating: 1

Math

Grade 4-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Scale Drawing

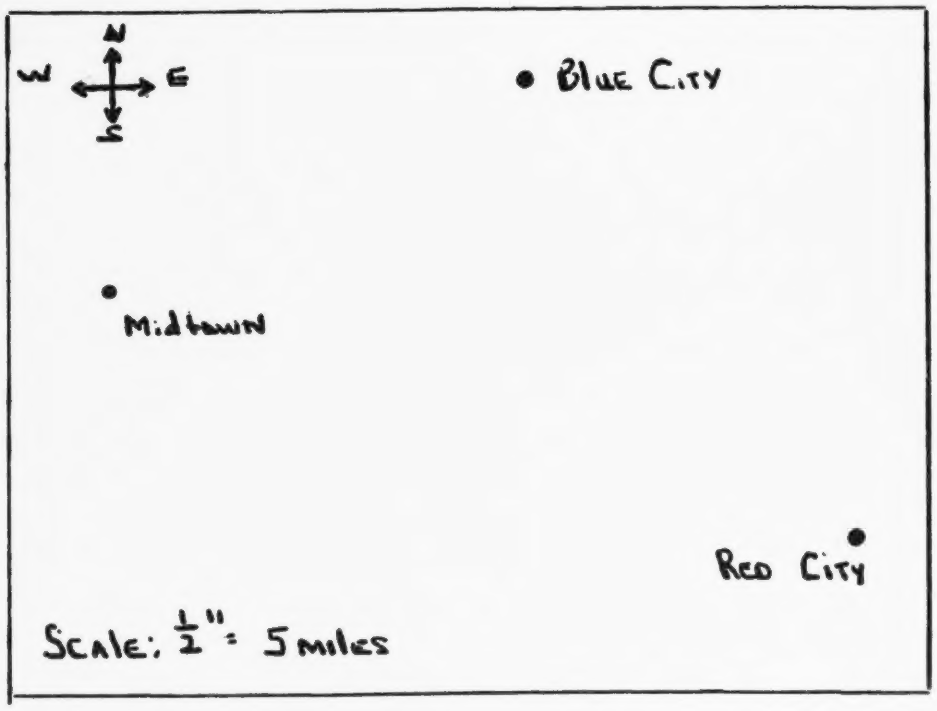
OBJECTIVE: Given a scale 1/2" = 5 miles, the student will give the distance between cities on the map.

SAMPLE ITEM:

A) How far is it from Blue City to Midtown?

B) How far is it from Midtown to Red City?

C) How far is it from Blue City to Red City?


N
W
E
S
Blue City
Midtown
Red City
Scale: $\frac{1}{2}$" = 5 miles

Answer: A) 20 miles B) 35 miles C) 25 miles

ITEM 1

Objective 164 Math

IOX Acceptability Rating: 1 Grade 5-6

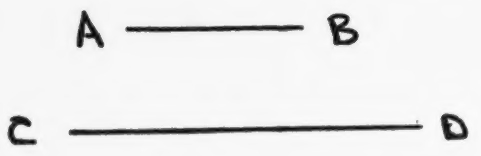
MAJOR CATEGORY: Measurement

SUB-CATEGORY: Linear

OBJECTIVE: Given a line segment to be used as a unit of measurement and a line segment to be measured, the student will measure the segment with the given unit of measurement.

SAMPLE ITEMS:

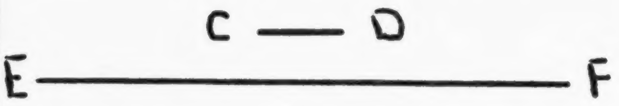
Measure $\overline{CD}$ using $\overline{AB}$ as the unit of measurement.



Answer: 2 $\overline{AB}$

ITEM 1

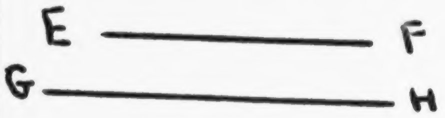
Measure $\overline{EF}$ using $\overline{CD}$ as the unit of measurement.



Answer: 6 $\overline{CD}$

ITEM 2

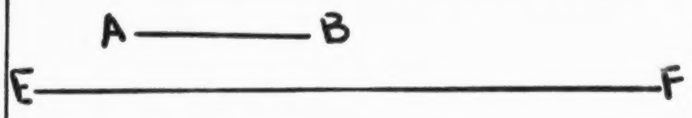
Measure $\overline{GH}$ using $\overline{EF}$ as the unit of measurement.



Answer: $1\frac{1}{3}$ EF

ITEM 3

Measure $\overline{EF}$ using $\overline{AB}$ the unit of measurement.



Answer: $3\frac{1}{2}$ AB

ITEM 4

Objective 165 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Measurement

SUB-CATEGORY: Metric System

OBJECTIVE: Given a unit of measure in the metric system, the student will name the approximate measure in the English system.

SAMPLE ITEMS: Use the table supplied by the teacher.

Name the approximate number of yards. 2 meters Answer: 2 yards ITEM 1	Name the approximate number of pounds. 5 kilograms Answer: 10 pounds ITEM 2
Name the approximate number of quarts. 13 liters Answer: 14 quarts ITEM 3	Name the approximate number of pounds. 2 kilograms Answer: 4 pounds ITEM 4

Objective 166 Math

IOX Acceptability Rating: 1 Grade 6

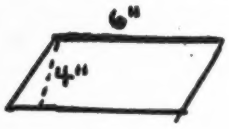
MAJOR CATEGORY: Measurement

SUB-CATEGORY: Parallelograms

OBJECTIVE: Given the lengths of the base and the altitude, the student will determine the area of any parallelogram.

SAMPLE ITEMS:

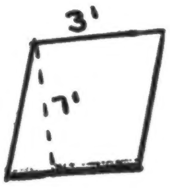
Determine the area of this parallelogram.



Answer: 24 sq. in.

ITEM 1

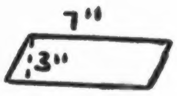
Determine the area of this parallelogram.



Answer: 21 sq. ft.

ITEM 2

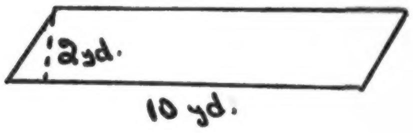
Determine the area of this parallelogram.



Answer: 21 sq. in.

ITEM 3

Determine the area of this parallelogram.



Answer: 20 sq. yd.

ITEM 4

Objective 167

IOX Acceptability Rating: 1

Math

Grade 4

MAJOR CATEGORY: Geometry

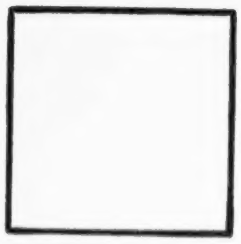
SUB CATEGORY: Perimeter

OBJECTIVE: Given a polygon of n sides and a ruler, the student will accurately measure its perimeter correct to the nearest half inch.

SAMPLE ITEMS:

In inches, what is the perimeter of the polygon below?

Use your ruler to find the measure correct to the nearest half inch.

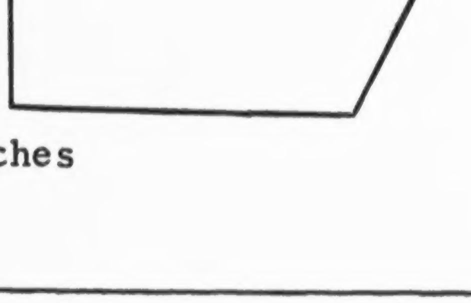


Answer: 4 inches.

ITEM 1

In inches, what is the perimeter of the polygon below?

Use your ruler to find the measure correct to the nearest half inch.



Answer: 6 inches

ITEM 2

Objective 168 Math

IOX Acceptability Rating: 1 Grade 4-6

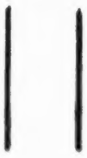
MAJOR CATEGORY: Geometry

SUB-CATEGORY: Lines--Parallel, Perpendicular, Intersecting

OBJECTIVE: Given pairs of lines, the student will label them parallel, perpendicular, and/or intersecting.

SAMPLE ITEMS:

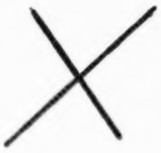
Label the pair of lines as parallel, perpendicular, and/or intersecting.



Answer: parallel

ITEM 1

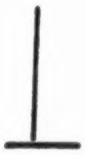
Label the pair of lines as parallel, perpendicular, and/or intersecting.



Answer: intersecting

ITEM 2

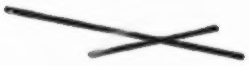
Label the pair of lines as parallel, perpendicular, and/or intersecting.



Answer: perpendicular, intersecting.

ITEM 3

Label the pair of lines as parallel, perpendicular, and/or intersecting.



Answer: intersecting

ITEM 4

Objective 169 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Geometry

SUB-CATEGORY: Points, Curves, Lines, Line Segments, Rays

OBJECTIVE: Given a list of geometric terms, the student will draw a pictorial representation and label each.

SAMPLE ITEMS:

Draw and label each of the geometric elements listed below:

A. Point P B. Curve AB C. Line CD D. Line segment $\overline{PQ}$

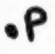
E. Ray RS F. Angle ABC

A. D.

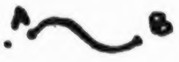
B. E.

C. F.

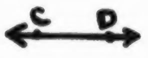
Answer: A.



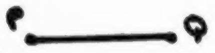
B.



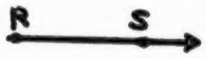
C.



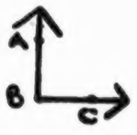
D.



E.



F.



ITEM 1

Objective 170 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Geometry

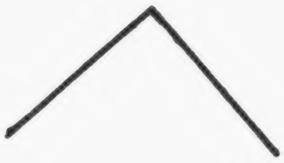
SUb-CATEGORY: Construction With A Straightedge

OBJECTIVE: Given a straightedge, the student will construct a specific geometric figure.

SAMPLE ITEMS:

Using a straightedge, draw an angle.

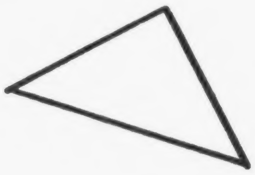
Possible Answer:



ITEM 1

Using a straightedge, draw a triangle.

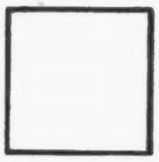
Possible Answer:



ITEM 2

Using a straightedge, draw a square.

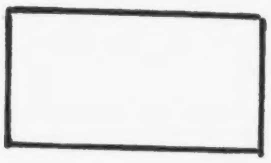
Possible Answer:



ITEM 3

Using a straightedge, draw a rectangle.

Possible Answer:



ITEM 4

Objective 171 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Geometry

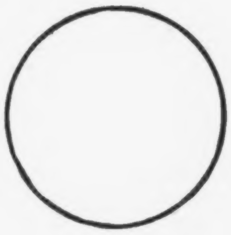
SUB-CATEGORY: Constructions

OBJECTIVE: Given a radius and a ruler and a compass, the student will construct a circle.

SAMPLE ITEMS:

Use a compass to construct a circle with a radius of $\frac{1}{2}$ inch.

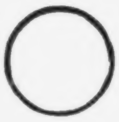
Answer:



ITEM 1

Use a compass to construct a circle with a radius of $\frac{1}{4}$ inch.

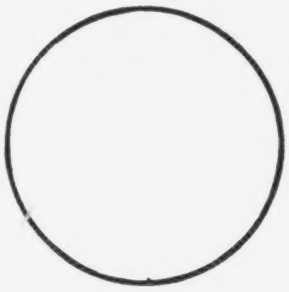
Answer:



ITEM 2

Use a compass to construct a circle with a radius of $\frac{5}{8}$ inch.

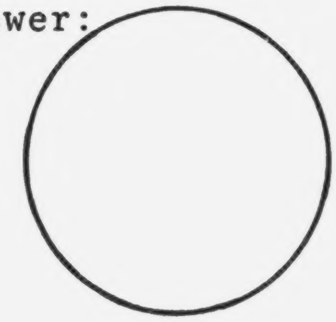
Answer:



ITEM 3

Use a compass to construct a circle with a radius of $\frac{11}{16}$ inch.

Answer:



ITEM 4

Objective 172 Math

IOX Acceptability Rating: 1 Grade 4-6

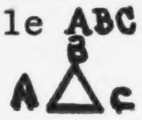
MAJOR CATEGORY: Geometry

SUB CATEGORY: Constructions--Congruent Figures

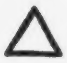
OBJECTIVE: Given a straightedge and a compass, the student will construct a plane figure congruent to a given geometrical figure.

SAMPLE ITEMS:

Construct a triangle congruent to the given triangle ABC.

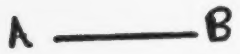


Answer:

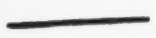


ITEM 1

Construct a line segment congruent to the given line segment $\overline{AB}$.

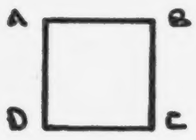


Answer:

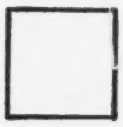


ITEM 2

Construct a square congruent to the given square ABCD.

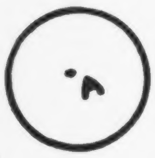


Answer:

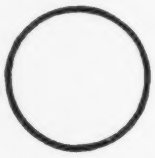


ITEM 3

Construct a circle congruent to the given circle A.



Answer:



ITEM 4

Objective 173 Math

IOX Acceptability Rating: 1 Grade 4-6

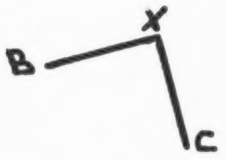
MAJOR CATEGORY: Geometry

SUB-CATEGORY: Angle Measurement

OBJECTIVE: Given an angle and a protractor, the student will measure the angle correct within two degrees and name the angle using three letters.

SAMPLE ITEMS:

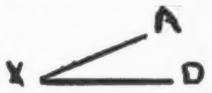
Name the number of degrees in the following angle.



Answer: BXC = 90°

ITEM 1

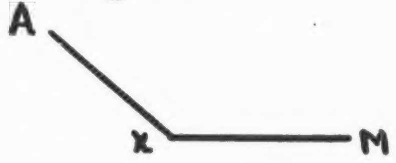
Name the number of degrees in the following angle.



Answer: AXD = 25°

ITEM 2

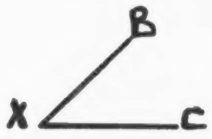
Name the number of degrees in the following angle.



Answer: AXM = 140°

ITEM 3

Name the number of degrees in the following angle.



Answer: BXC = 45°

ITEM 4

Objective 174

IOX Acceptability Rating: 1

Math

Grade 4-6

MAJOR CATEGORY: Geometry

SUB-CATEGORY: Plane Figures (as sets of points)

OBJECTIVE: Given a list of conditions describing a set of points, the student will name the set of points satisfying the given conditions.

SAMPLE ITEMS:

Fill in the blank.

The set of all points one-half inch from a given point is a(n)_____.

Answer: circle

ITEM 1

Fill in the blank.

The set of points bisecting a circle is a(n)_____.

Answer: diameter

ITEM 2

Fill in the blank.

The set of points less than 360° connecting two given points on the circumference of a circle is a(n)_____.

Answer: arc

ITEM 3

Fill in the blank.

The set of points forming a line that is equidistant at all points from a given line is a(n)_____.

Answer: parallel line

ITEM 4

Objective 175 Math

IOX Acceptability Rating: 1 Grade 4-6

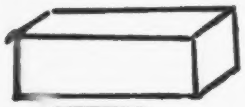
MAJOR CATEGORY: Geometry

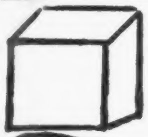
SUB-CATEGORY: Prisms, Cubes, Cylinders, Cones

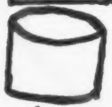
OBJECTIVE: Given a set of models and names of various space figures, the student will match the model with the appropriate name.

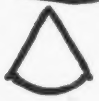
SAMPLE ITEMS:

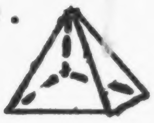
Match each name in the left column with an appropriate figure in the right column.

1. Pyramid a. 

2. Cylinder b. 

3. Right Rectangular Prism c. 

4. Cube d. 

5. Cone e. 

Answer: 1. e

2. c

3. a

4. b

5. d

ITEM 1

Objective 176 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Geometry

SUB-CATEGORY: Closed Curves, Simple Closed Curves, Open Curves

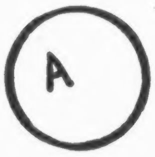
OBJECTIVE: Given a set of geometric figures, the student will distinguish between closed, simple closed, and open curves.

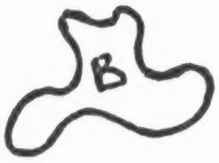
SAMPLE ITEMS:

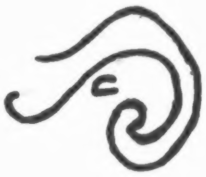
List the letter of each curve in the proper column.

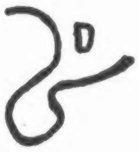
Closed	Simple Closed	Open

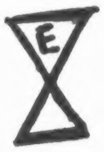
GIVEN:











Answer:

Closed	Simple Closed	Open
A	A	C
B	B	D
E		

ITEM 1

Objective 177 | Math

IOX Acceptability Rating: 1 | Grade 5-6

MAJOR CATEGORY: Geometry

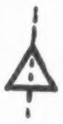
SUB-CATEGORY: Symmetry of Plane Figures

OBJECTIVE: Given the necessary materials, the student will cut out a symmetric plane figure and then fold it to show its line of symmetry.

SAMPLE ITEMS:

Cut out an equilateral triangle and fold it to show its line of symmetry.

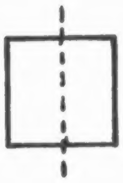
Possible Answer:



ITEM 1

Cut out a square and fold it to show its line of symmetry.

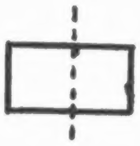
Possible Answer:



ITEM 2

Cut out a rectangle and fold it to show its line of symmetry.

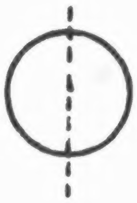
Possible Answer:



ITEM 3

Cut out a circle and fold it to show its line of symmetry.

Possible Answer:



ITEM 4

Objective 178 Math

IOX Acceptability Rating: 1 Grade 5-6

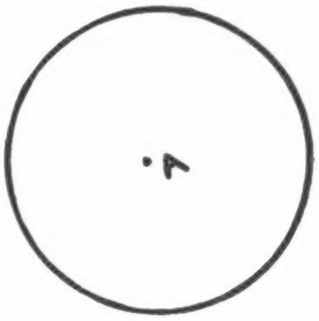
MAJOR CATEGORY: Geometry

SUB-CATEGORY: Arc, Diameter, Radius, Chord

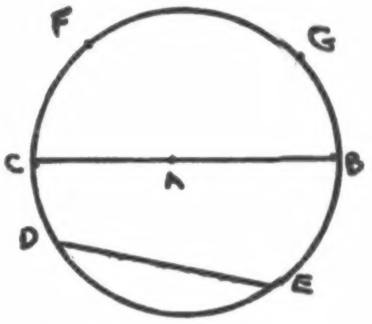
OBJECTIVE: Given a circle, the student will draw and label at least one arc, one diameter, one radius, and one chord.

SAMPLE ITEMS:

Draw and label at least one arc, one diameter, one one radius, and one chord.



Possible
Answer:
radius $\overline{AB}$
diameter $\overline{CB}$
chord $\overline{DE}$
arc $\overline{FG}$



ITEM 1

Objective 179 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Geometry

SUB-CATEGORY: Constructing Angles

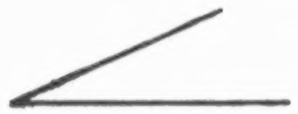
OBJECTIVE: Given measures for angles and a protractor, the student will construct the given angle.

SAMPLE ITEMS:

Construct an angle of the following measure:

25°

Answer:

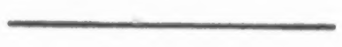


ITEM 1

Construct an angle of the following measure:

180°

Answer:

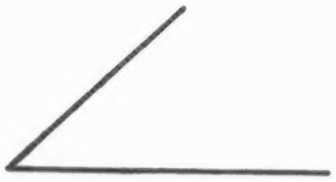


ITEM 2

Construct an angle of the following measure:

45°

Answer:

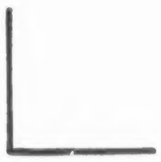


ITEM 3

Construct an angle of the following measure:

90°

Answer:



ITEM 4

Objective 180

IOX Acceptability Rating: 1

Math

Grade 6

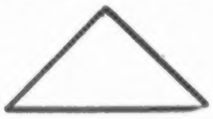
MAJOR CATEGORY: Geometry

SUB-CATEGORY: Angles--Polygons

OBJECTIVE: Given a polygon, the student will name the sum of the measures of the angles

SAMPLE ITEMS:

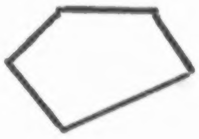
Name the sum of the measures of the angles for the following polygon.



Answer: 180°

ITEM 1

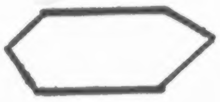
Name the sum of the measures of the angles for the following polygon.



Answer: 3(180°) = 540°

ITEM 2

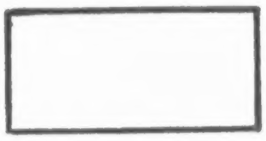
Name the sum of the measures of the angles for the following polygon.



Answer: 6(180°) = 720°

ITEM 3

Name the sum of the measures of the angles for the following polygon



Answer: 2(180°) = 360°

ITEM 4

Objective 181 Math

IOX Acceptability Rating: 1 Grade 6

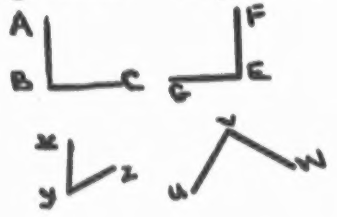
MAJOR CATEGORY: Geometry

SUB-CATEGORY: Congruent Angles

OBJECTIVE: Given a set of angles, the student will state which are congruent.

SAMPLE ITEMS:

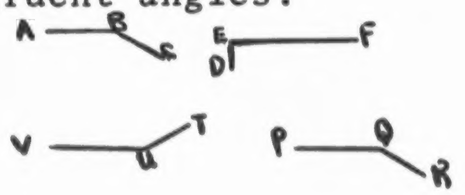
Name the pair of congruent angles.


A
F
B
C
G
E
X
Y
Z
V
U
W

Answer: <ABC ≅ <FEG

ITEM 1

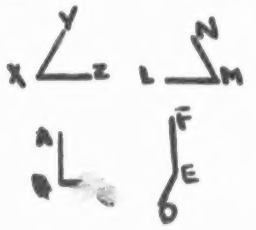
Name the pair of congruent angles.


A
B
C
E
D
F
V
U
T
P
Q
R

Answer: VUT ≅ PQR

ITEM 2

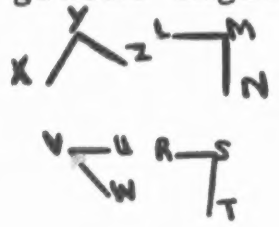
Name the pair of congruent angles.


Y
N
X
Z
L
M
A
F
B
E
D

Answer: <XYZ ≅<LMN

ITEM 3

Name the pair of congruent angles.


Y
L
M
X
Z
N
V
U
R
S
W
T

Answer: <XYZ ≅ <LMN

ITEM 4

Objective 182 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Geometry

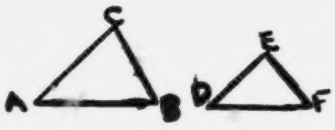
SUB-CATEGORY: Similar Polygons

OBJECTIVE: Given a pair of similar polygons, the student will complete statements to identify congruent ∠s and identify the ratio between corresponding sides.

SAMPLE ITEMS:

Using the triangles below, complete the following statement:

m(∠A) = m(___)

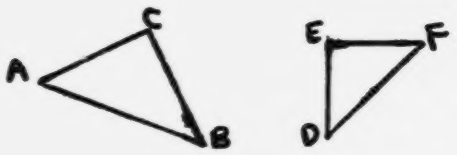


Answer: ∠D

ITEM 1

Using the triangles below, complete the following statement:

m(∠C) = m(___)

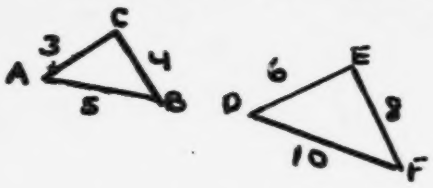


Answer: ∠E

ITEM 2

Using the triangles below, complete the following statement:

The ratio of $\overline{DE}$ to $\overline{AC}$ =

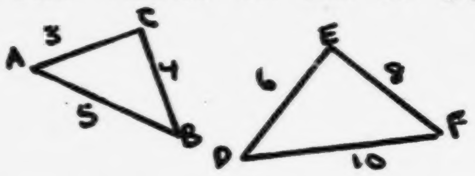


Answer: $\frac{2}{1}$

ITEM 3

Using the triangles below, complete the following statement:

The ratio of $\overline{AC}$ to $\overline{DE}$ =



Answer: $\frac{8}{16}$ or $\frac{1}{2}$

ITEM 4

Objective 183 Math

IOX Acceptability Rating: 1 Grade 6

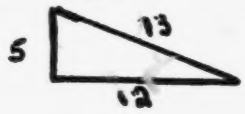
MAJOR CATEGORY: Geometry

SUB-CATEGORY: Theorem of Pythagoras

OBJECTIVE: Given a list of triangles with measures, the student will use the Theorem of Pythagoras to determine whether or not they are right triangles.

SAMPLE ITEMS:

Use the Theorem of Pythagoras to determine if the following triangle is a right triangle.



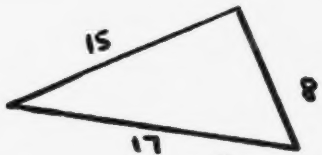
Answer: $12^2 + 5^2 = 13^2$

$144 + 25 = 169$

Yes, it is a right $\triangle$.

ITEM 1

Use the Theorem of Pythagoras to determine if the following triangle is a right triangle.



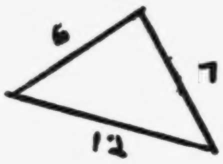
Answer: $15^2 + 8^2 = 17^2$

$225 + 64 = 289$

Yes, it is a right $\triangle$.

ITEM 2

Use the Theorem of Pythagoras to determine if the following triangle is a right triangle.

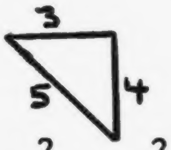


Answer: $6^2 + 7^2 \neq 12^2$
$36 + 49 \neq 144$

No, it is not.

ITEM 3

Use the Theorem of Pythagoras to determine if the following triangle is a right triangle.



Answer: $3^2 + 4^2 = 5^2$

$9 + 16 = 25$

Yes, it is a right $\triangle$.

ITEM 4

Objective 184

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Relations, Functions and Graphs

SUB-CATEGORY: Number Lines

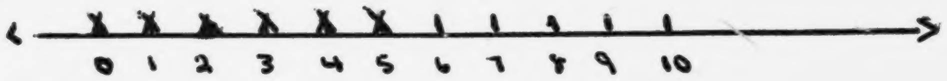
OBJECTIVE: Given a number sentence, the student will name the solution set and graph it on a number line.

SAMPLE ITEMS:

Name the solution set and graph it on a number line, using the set of whole numbers.

$a + 4 < 10$

ANSWER: $\{0, 1, 2, 3, 4, 5\}$

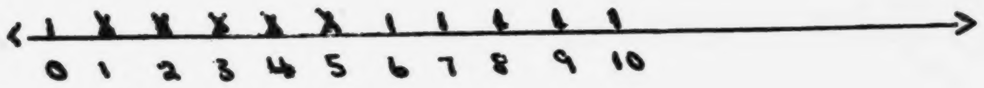


ITEM 1

Name the solution set and graph it on a number line, using the set of whole numbers.

$b - 1 < 5$

ANSWER: $\{1, 2, 3, 4, 5\}$



ITEM 2

Objective 185 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Relations, Functions and Graphs

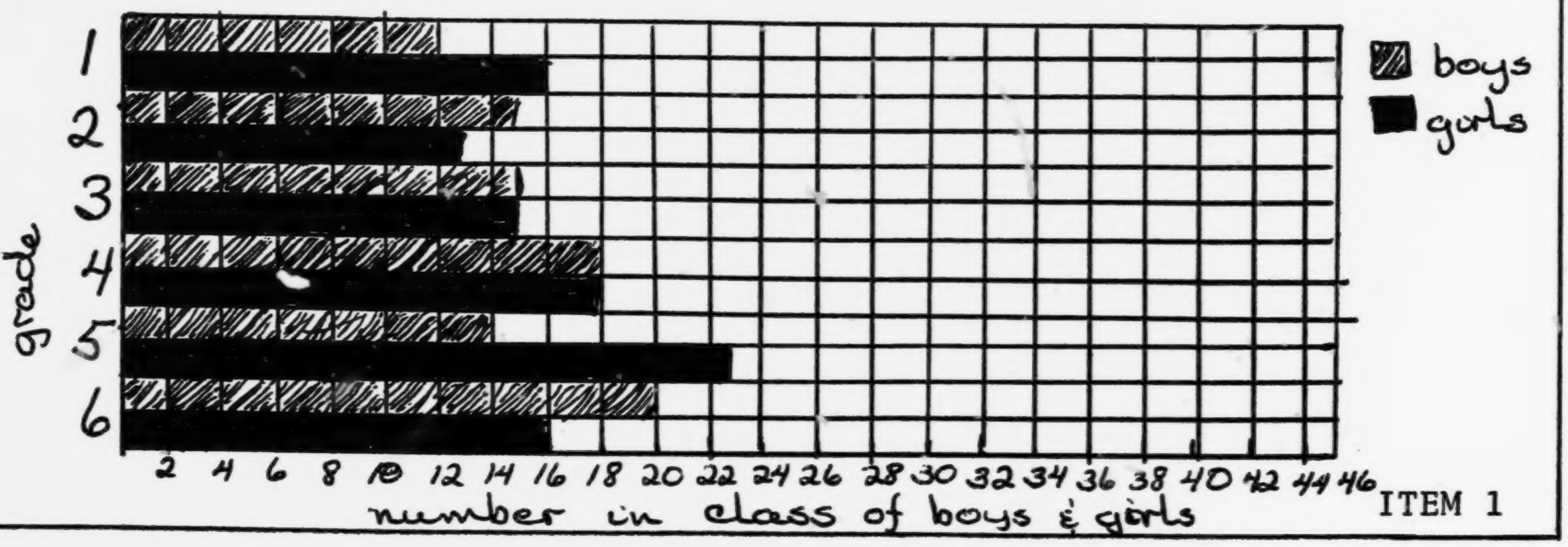
SUB-CATEGORY: Double Bar Graphs

OBJECTIVE: Given a set of ordered pairs of related data, the student will construct a double bar graph to show the relationship.

SAMPLE ITEM: Make a double bar graph showing the number of boys (first number in the ordered pair) and the number of girls (second number in the ordered pair) in first through sixth grade classes.

First Grade (12, 16)	Fourth Grade (18,18)
Second Grade (15,13)	Fifth Grade (14,23)
Third Grade (15,15)	Sixth Grade (20,16)

ANSWER:



ITEM 1

Objective 186 Math

IOX Acceptability Rating: 1 Grade 4-6

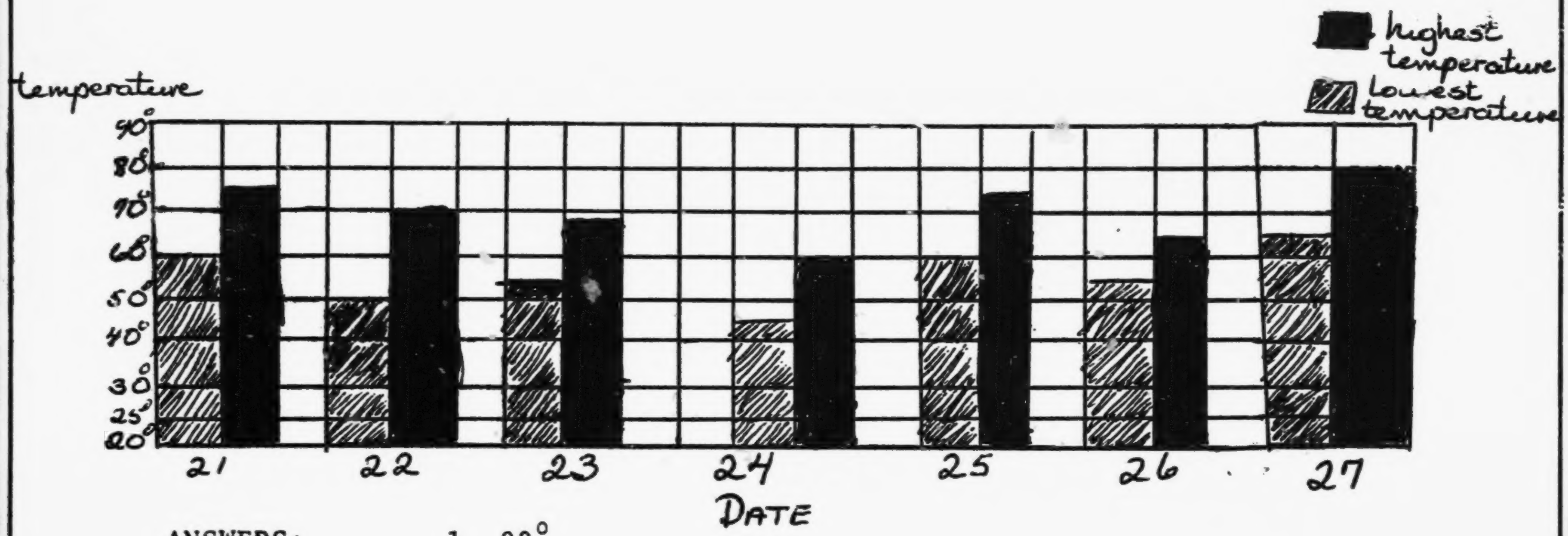
MAJOR CATEGORY: Relations, Functions, and Graphs

SUB-CATEGORY: Double Bar Graphs

OBJECTIVE: Given data on a double bar graph, the student will name the relationships of the data.

SAMPLE ITEM: Extract the following data from the graph.

1. What was the highest temperature for the week?
2. What was the lowest temperature for the week?



ANSWERS:
1. 80°
2. 45°

ITEM 1

Objective 187 | Math
IOX Acceptability Rating: 1 | Grade 4-6

MAJOR CATEGORY: Relations, Functions and Graphs

SUB-CATEGORY: Number planes

OBJECTIVE: Given an ordered number pair, the student will label each point on a number plane.

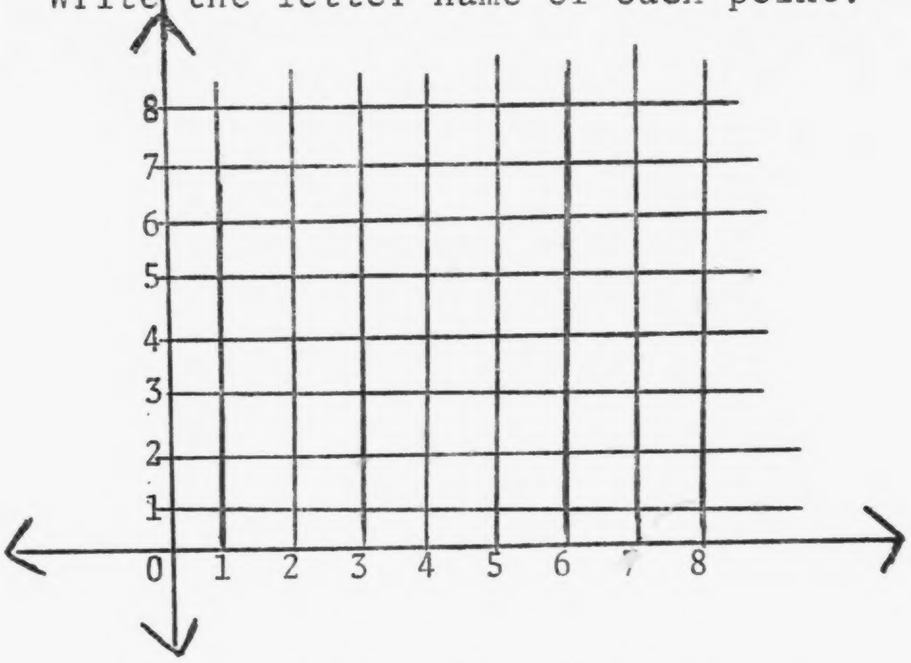
SAMPLE ITEM: Write the letter name of each point.

a=(2,4)

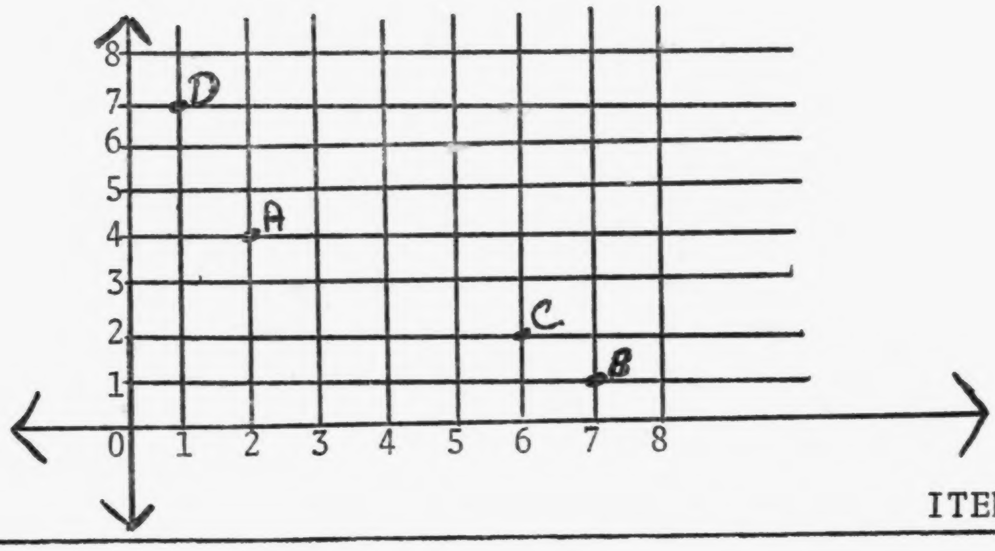
b=(7,1)

c=(6,2)

d=(1,7)


8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8

ANSWER:


8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
D
A
C
B

ITEM 1

Objective 188

IOX Acceptability Rating: 1

Math

Grade 4-6

MAJOR CATEGORY: Relations, Functions, and Graphs

SUB-CATEGORY: Equations and Functions

OBJECTIVE: Given a rule and a set of incomplete ordered pairs, the student will use the rule to complete each of the ordered pairs.

SAMPLE ITEMS:

Use the given rules and complete each set of ordered pairs.

ADD: 4

$\{(2,x), (7,y), (0,a)\}$

Answer:

$x=6, y=11, a=4$

ITEM 1

Use the given rules and complete each set of ordered pairs.

ADD: 5

$\{(2,a), (3,b), (4,c)\}$

Answer:

$a=7, b=8, c=9$

ITEM 2

Use the given rules and complete each set of ordered pairs.

SUBTRACT: 2

$\{(7,b), (10,c), (2,d)\}$

Answer:

$b=5, c=8, d=0$

ITEM 3

Use the given rules and complete each set of ordered pairs.

Subtract: 3

$\{(3,x), (6,y), (9,z)\}$

Answer:

$x=0, y=3, z=6$

ITEM 4

Objective 189

IOX Acceptability Rating: 1

Math

Grade 4-6

MAJOR CATEGORY: Relations, Functions, and Graphs

SUB-CATEGORY: Equations and Functions

OBJECTIVE: Given a set of ordered number pairs, the student will write the equation with two unknowns to name the rule for the function.

SAMPLE ITEMS:

Using two unknowns, write the equation to state the rule for the function.

x	5	2	10	8	7	3	9	6	4
y	6	3	11	9	8	4	10	7	5

Answer: x+1=y

ITEM 1

Using two unknowns, write the equation to state the rule for the function.

a	1	2	3	4	5	6	7	8
b	3	4	5	6	7	8	9	10

Answer: a+2=b

ITEM 2

Using two unknowns, write the equation to state the rule for the function.

x	10	9	8	7	6	5	4	3
y	9	8	7	6	5	4	3	2

Answer: x-1=y

ITEM 3

Using two unknowns, write the equation to state the rule for the function.

a	10	9	8	7	6	5	4	3	2
b	8	7	6	5	4	3	2	1	0

Answer: a-2=b

ITEM 4

Objective 190 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Relation, Functions, and Graphs

SUB-CATEGORY: Sequence

OBJECTIVE: Given an incomplete number pattern, the student will continue the sequence until it contains a specified number of terms.

SAMPLE ITEM: Continue the sequence until it contains ten terms.

11,21,31,41,............

0,11.22,33.44,..........

ANSWERS:

51,61,71,81,91,101

55,66,77,88,99

ITEM 1

Objective 191

IOX Acceptability Rating: 1

Math

Grade 6

MAJOR CATEGORY: Relations, Functions and Graphs

SUB-CATEGORY: Number pairs

OBJECTIVE: Given a set of incomplete number pairs in which a number pattern is indicated, the student will complete each set.

SAMPLE ITEM: Using the pattern indicated in the first 3 ordered pairs, complete each set of number pairs.

(0,2), (1,5), (2,8), (3,a), (4,b), (5,c), (6,d), (7,e), (8,f), (9,g)

ANSWER: a=11; b=14; c=17; d=20; e=23; f=26; g=29

ITEM 1

Objective 192

IOX Acceptability Rating: 1

Math

Grade 6

MAJOR CATEGORY: Relations, Functions and Graphs

SUB-CATEGORY: Equations

OBJECTIVE: Given a set of ordered pairs the student will write an equation for the set.

SAMPLE ITEMS:

Write an equation for the set of ordered pairs.

$\{(12,12),(13,13),(14,14),(15,15),(16,16),\ldots\}$

Possible
Answer: $A+0=A$

ITEM 1

Write an equation for the set of ordered pairs.

$\{(1,2),(2,3),(3,4),(4,5),(5,6),\ldots\}$

Possible
Answer: $A+1=B$

ITEM 2

Write an equation for the set of ordered pairs.

$\{(1,0),(2,0),(3,0),(4,0),(5,0),(6,0),\ldots\}$

Possible
Answer: $A-A=0$

ITEM 3

Write an equation for the set of ordered pairs.

$\{(5,7),(6,8),(7,9),(8,10),\ldots\}$

Possible
Answer: $A+2=B$

ITEM 4

Objective 193

IOX Acceptability Rating: 1

Math

Grade 6

MAJOR CATEGORY: Relations, Functions and Graphs

SUB-CATEGORY: Rates

OBJECTIVE: Given a function rule and a chart of incomplete number pairs, the student will use the rule to find the missing numbers.

SAMPLE ITEM: Name the missing numbers in the following pairs.

The rate: \$8.00 per day. The rule: $8 \times M=f(M)$.

number of days: M	2	3	4	5	6	7	8	9
number of dollars: $f(M)$	\$16	b	c	d	e	f	g	h

ANSWER: b. \$24; c. \$32; d. \$40; e. \$48; f. \$56; g. 64; h. \$72

ITEM 1

Objective 194

IOX Acceptability Rating: 1

Math

Grade 6

MAJOR CATEGORY: Relations, Functions and Graphs

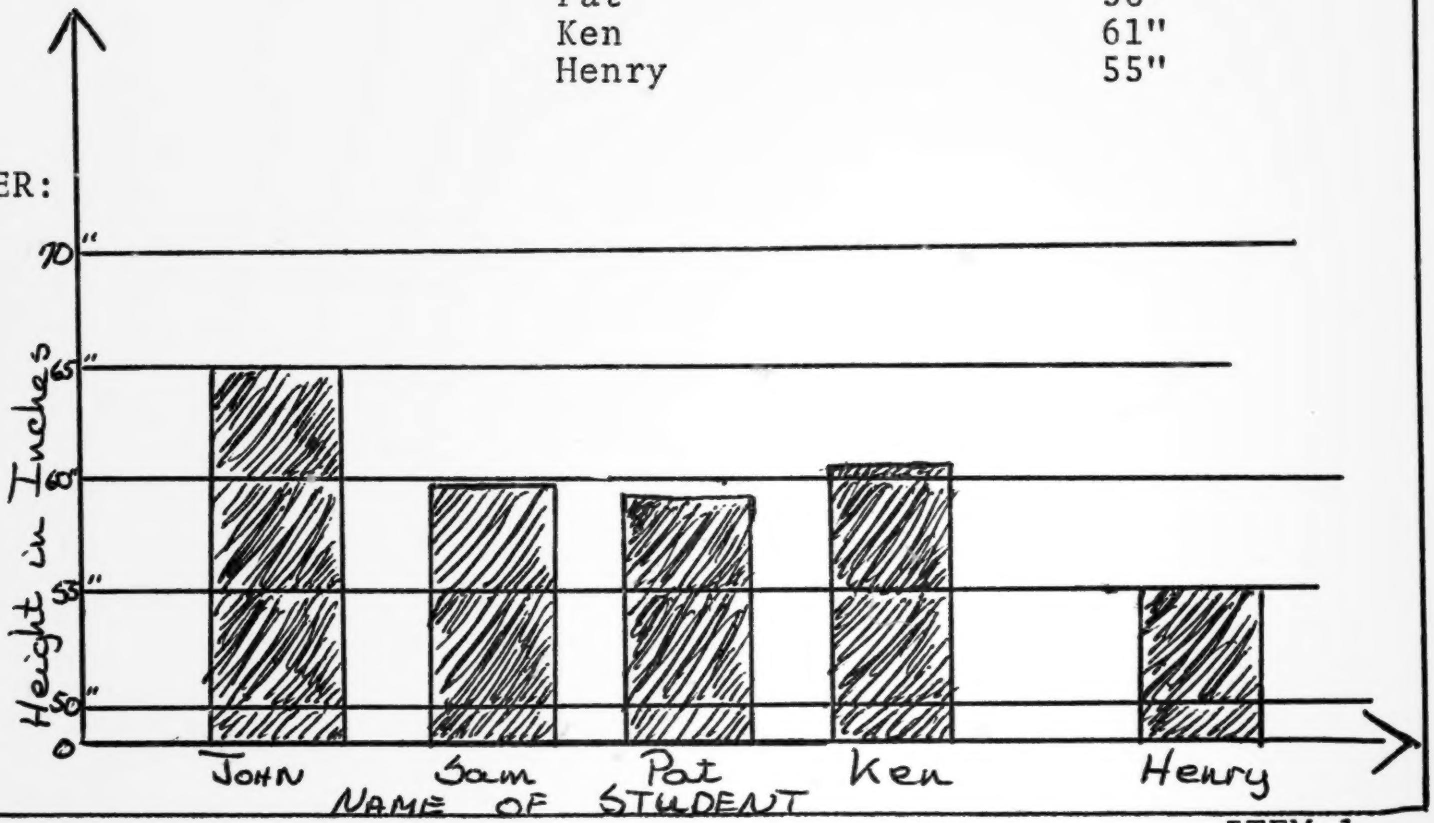
SUB-CATEGORY: Bar Graphs

OBJECTIVE: Given data, the student will construct a bar graph illustrating the data.

SAMPLE ITEM: With the following data concerning heights of students construct a bargraph.

Name of Student	Height in inches
John	65"
Sam	59"
Pat	58"
Ken	61"
Henry	55"

ANSWER:



ITEM 1

Objective 195

IOX Acceptability Rating: 1

Math

Grade 6

MAJOR CATEGORY: Relations, Functions and Graphs

SUB-CATEGORY: Graphing linear equations

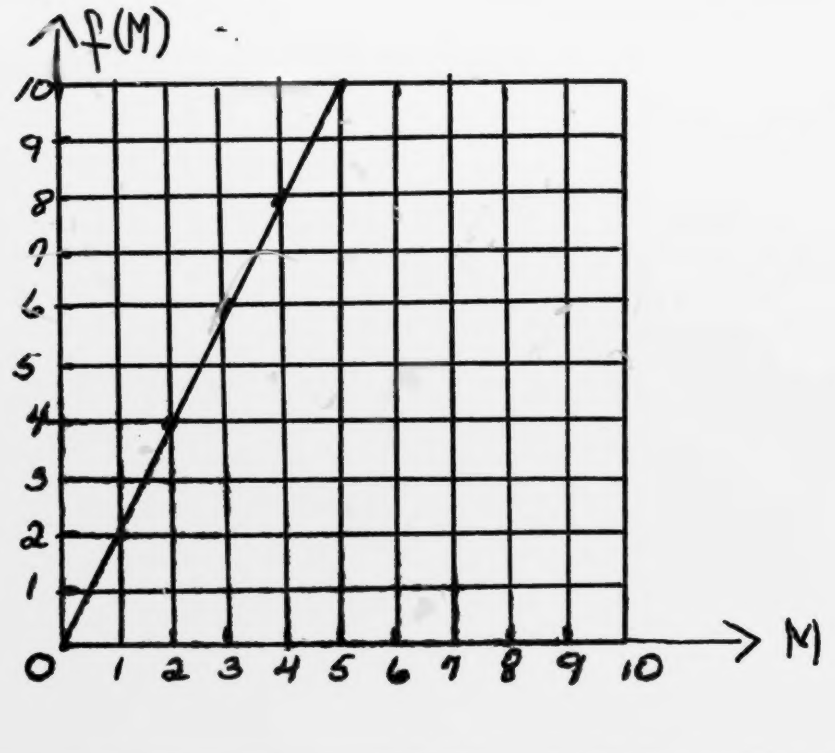
OBJECTIVE: Given an equation, the student will draw a number plane and graph the equation.

SAMPLE ITEM: Draw a number plane and graph the equation:

$f(m)=2m$ where $0 \leq m \leq 5$

m	0	1	2	3	4	5
f(m)	0	2	4	6	8	10

ANSWER:



ITEM 1

Objective 196 — Math

IOX Acceptability Rating: 1 — Grade 4-6

MAJOR CATEGORY: Probability and Statistics

SUB-CATEGORY: Averages

OBJECTIVE: Given a set of numbers, the student will compute the average.

SAMPLE ITEMS:

Name the average for the set of numbers: 12, 16, 19, 4, 4 Answer: 11 ITEM 1	Name the average for the set of numbers: 9, 6, 5, 14, 36 Answer: 14 ITEM 2
Name the average for the set of numbers: 0, 11, 14, 31, 40, 6 Answer: 17 ITEM 3	Name the average for the set of numbers: 12, 3, 96, 42, 2 Answer: 31 ITEM 4

Objective 197 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Probability and Statistics

SUB-CATEGORY: Chance

OBJECTIVE: Given a probability experiment, the student will record the outcomes of the experiment with tally marks.

SAMPLE ITEMS:

Toss a quarter 25 times and record with tally marks the number of times tails and heads come up.

Answer: Answers will vary.

ITEM 1

Toss a die 30 times and record with tally marks the numbers that come up.

Answer: Answers will vary.

ITEM 2

Put a green marble, a black marble, and a white marble into a covered box. Pick a marble and then put it back in the box. Repeat this 25 times and record with tally marks the colors that come up.

Answer: Answers will vary.

ITEM 3

Pick a card from a deck of 52 cards and then put it back. Shuffle, and repeat this 100 times. Record your results with tally marks.

Answer: Answers will vary.

ITEM 4

Objective 198 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Probability Statistics

SUB-CATEGORY: Median

OBJECTIVE: Given a set of numbers, the student will arrange the numbers in order of magnitude and name the median.

SAMPLE ITEMS:

Arrange the numbers in order of magnitude and name the median. 12, 7, 4, 9, 10 Answer: 4, 7, 9, 10, 12 Median = 9 ITEM 1	Arrange the numbers in order of magnitude and name the median. 35, 14, 98, 43, 62 Answer: 14, 35, 43, 62, 98, Median = 43 ITEM 2
Arrange the numbers in order of magnitude and name the median. 363, 318, 218, 960, 240 Answer: 218, 240, 318, 363, 960 Median = 318 ITEM 3	Arrange the numbers in order of magnitude and name the median. 10^1, 10^2, 10^{-3}, 10^6, 10^7 Answer: 10^{-3}, 10^1, 10^2, 10^6, 10^7 Median = 10^2 ITEM 4

Objective 199 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Probability and Statistics

SUB-CATEGORY: Chance

OBJECTIVE: Given a set of events, the student will express in fractional form the probability that the particular event may occur.

SAMPLE ITEMS:

From the set 2, 4, 7, 18, 9, 16 write the fraction to name the probability of obtaining:

1. odd number
2. even number
3. number divisible by 8

Answer: 1. 2/6 or 1/3

2. 4/6 or 2/3

3. 1/6

ITEM 1

Objective 200 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Probability and Statistics

SUB-CATEGORY: Ordered Pairs--Data

OBJECTIVE: Given a table of data, the student will write the data as a set of ordered pairs.

SAMPLE ITEMS:

Write the data from the table as a set of ordered pairs.

time: seconds	distance travelled in yards by a girl running
2	10
4	20
6	30
8	40
10	50
20	100

Answer: (2, 10), (4, 20), (6, 30), (8, 40), (10,50), (20, 100)

ITEM 1

Objective 201 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Probability and Statistics

SUB-CATEGORY: Average, Median, and Mode

OBJECTIVE: Given a set of data, the student will name the average, median, and mode.

SAMPLE ITEMS:

Name the average, median, and mode for the following data:

400
400
325
325
325
250
250

Answer:
average: 325
median: 325
mode: 325

ITEM 1

Name the average, median, and mode for the following data:

400
368
218
318
318
268

Answer:
average: 315
median: 318
mode: 318

ITEM 2

Name the average, median, and mode for the following data:

3
6
18
18
3
12
3

Answer:
average: 9
median: 6
mode: 3

ITEM 3

Name the average, median, and mode for the following data:

2/8
7/8
6/8
2/8
2/8
3/8
6/8

Answer:
average: 4/8
median: 3/8
mode: 2/8

ITEM 4

Objective 202 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Probability and Statistics

SUB-CATEGORY: Chance

OBJECTIVE: Given a description of a probability experiment, the student will state the probability of the outcomes.

SAMPLE ITEMS:

If you tossed a quarter twenty-six times, what would be the probability of tossing a head? What would be the probability of tossing a tail?

Answer: $\frac{1}{2}$

$\frac{1}{2}$

ITEM 1

If you rolled a die with numbers 1 through 6 on it, what would be the probability of rolling a three? What would be the probability of a six?

Answer: $\frac{1}{6}$

$\frac{1}{6}$

ITEM 2

If you had a green marble, a black marble and a white marble in a covered box, what would be the probability of selecting the green marble?

Answer: $\frac{1}{3}$

ITEM 3

What is the probability of selecting the 3 of hearts from a deck of 52 cards?

Answer: $\frac{1}{52}$

ITEM 4

Objective 203 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Probability and Statistics

SUB-CATEGORY: Independent Events

OBJECTIVE: Given two sets of events, the student will name the probability of two independent events happening at the same time.

SAMPLE ITEMS:

Name the probability of getting vanilla ice cream on chocolate cake.

A. vanilla ice cream, chocolate ice cream

B. chocolate cake, lemon cake, coconut cake

Answer: 1/6

The probability of getting vanilla ice cream is 1/2; of getting chocolate cake is 1/3; so the probability of getting vanilla ice cream with chocolate cake is 1/2 x 1/3 = 1/6.

ITEM 1

Name the probability of getting chocolate chip cookies and whole milk.

A. chocolate chip cookies, peanut butter cookies, oatmeal cookies

B. whole milk, non-fat milk, chocolate milk.

Answer: 1/9

The probability of getting chocolate chip cookies is 1/3; of getting whole milk 1/3; so the probability of of getting chocolate chip cookies with whole milk is 1/3 x 1/3 = 1/9.

ITEM 2

Objective 204 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Indicating Operations

OBJECTIVE: Given a word problem, the student will name the operation or operations that can be used to solve the problem.

SAMPLE ITEMS:

Name the operation or operations needed to solve the problem. How far can a plane fly in 5 hours at a given speed? Answer: multiplication ITEM 1	Name the operation or operations needed to solve the problem. If Marc drove 300 miles at 60 miles per hour, how many hours did he drive? Answer: division ITEM 2
Name the operation or operations needed to solve the problem. If Irene has $4.00 and wants to buy a dress for $8.95, how much more money does she need? Answer: subtraction ITEM 3	Name the operation or operations needed to solve the problem. If Bobby gets 35¢ allowance a week, how much money will he have if he saves it all after 23 1/2 months? Answer: multiplication multiplication ITEM 4

Objective 205

IOX Acceptability Rating: 1

Math

Grade 4 - 6

MAJOR CATEGORY: Applications--Problem Solving

SUB-CATEGORY: Verbal Problems (multiplication of whole numbers)

OBJECTIVE: Given a verbal problem involving multiplication of whole numbers, the student will write an equation and solve the problem.

SAMPLE ITEMS:

Write an equation to the word problem and solve the problem.

What is the cost of 6 train tickets at $4.54?

Answer: $4.54 x 6=_____

$4.54 x 6 = $27.24

ITEM 1

Write an equation to the word problem and solve the problem.

Mr. Jones travels 64 miles each day. How far does he travel in 365 days?

Answer: 365 x 64 = _____

365 x 64 = 23,360 miles

ITEM 2

Write an equation to the word problem and solve the problem.

Lisa practices the piano 3 hours a day. How many hours does she practice during the month of September (30 days in September)?

Answer: 30 x 3 = _____

30 x 3 = 90 hours

ITEM 3

Objective 206 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Verbal Problems (division of whole numbers)

OBJECTIVE: Given a verbal problem involving division of whole numbers, the student will write an equation and solve the problem.

SAMPLE ITEMS:

Write an equation for the word problem and solve it.

How many teams of 9 can be formed from 135 children?

Answer: 135 ÷ 9 = N

15 teams

ITEM 1

Write an equation for the word problem and solve it.

If 578,150 fans attended 25 baseball games held in Dodger Stadium, what was the average attendance per game?

Answer: 578,150 ÷ 25 = N

23,126 fans

ITEM 2

Write an equation for the word problem and solve it.

If a school bus has seats for 52 children, and 416 children are going on a field trip, how many buses will be needed?

Answer: 416 ÷ 52 = N

8 school buses

ITEM 3

Objective 207 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Verbal Problems With the Addition and Subtraction of Measures

OBJECTIVE: Given a word problem involving measures, the student will solve it by adding or subtracting.

SAMPLE ITEMS:

Solve the following problem:

Mary spent 1 1/2 hours on homework on Monday, 15 minutes on Tuesday, 2 hours on Wednesday, and 1 3/4 hours on Thursday. How much time did she spend on homework for the combined four nights?

Answer: 5 1/2 hours

ITEM 1

Solve the following problem.

Pete played volleyball at the beach 2 hours on Wednesday, 3 2/3 hours on Thursday, and 1 1/2 hours on Friday. How much time did he spend playing volleyball for the combined three days?

Answer: 7 1/6 hours

ITEM 2

Solve the following problem.

Eva saved 535 pennies in her piggy bank, and Jimmy saved 125. If Eva gives Jimmy 2 dollars in pennies, how many pennies will he have? How many will Eva have left?

Answer: 325
335

Objective 208

IOX Acceptability Rating: 1

Math

Grade 4-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Verbal Problems (addition of fractional numbers)

OBJECTIVE: Given a word problem involving addition of fractions, the student will solve it.

SAMPLE ITEMS:

John, Bill, and Tom went fishing off the pier last Saturday. John caught a salmon weighing 8 1/2 lbs. Bill cought one weighing one full pound more than John's. Tom caught a fish weighing 9 lbs. How much did all the fish weigh together?

Answer: 27 pounds

ITEM 1

Ann weighs 55 1/2 pounds, Molly weighs 64 1/3 pounds, and Margaret weighs 60 1/2 pounds. How many pounds do they all weigh together.

Answer: 180 1/3 lbs.

ITEM 2

Virgil grew 1 1/2 inches last summer, 3/8 inch last winter, and 1 3/16 inch this summer. How many inches did he grow in all?

Answer: 3 1/16 inches

ITEM 3

Objective 209 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Verbal Problems (subtraction of fractional numbers)

OBJECTIVE: Given a word problem involving the subtraction of fractioal numbers, the student will solve it.

SAMPLE ITEMS:

Solve the problem.

Mary went to the store and bought some ribbon 6 1/2 inches long. Susan, who went with her, also bought some ribbon but hers was 6 3/4 inches long. How much longer is Susan's ribbon?

Answer: 1/4 inch

ITEM 1

Solve the problem:

Ken's fishing line is 75 2/5 feet long, and his friend Bobby's fishing line is 80 1/4 feet long. How much longer is Bobby's fishing line?

Answer: 4 17/20 feet longer

ITEM 2

Solve the problem.

Daniel weighs 43 1/3 pounds, and his brother Juan weighs 160 1/4 pounds. How many more pounds does Daniel have to go before he weighs as much as his brother?

Answer: 116 11/12 pounds

ITEM 3

Objective 210 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Money

OBJECTIVE: Given a total value in cents, the student will show each amount in the fewest number of coins.

SAMPLE ITEMS:

Name the following amount in the fewest number of coins. 36 cents Answer: 1 quarter, 1 dime, 1 penny ITEM 1	Name the following amount in the fewest number of coins. 49 cents Answer: 1 quarter, 2 dimes, 4 pennies ITEM 2
Name the following amount in the fewest number of coins. 83 cents Answer: 1 half dollar, 1 quarter, 1 nickel, 3 pennies ITEM 3	Name the following amount in the fewest number of coins. 146 cents Answer: 2 half dollars, 1 quarter, 2 dimes, 1 penny ITEM 4

Objective 211

IOX Acceptability Rating: 1

Math

Grade 4-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Equations

OBJECTIVE: Given a verbal problem involving money, the student will write the equation and state the answer.

SAMPLE ITEMS:

Write the equation and name the answer.

Tim and Terry charge 15¢ each to shine shoes. If Tim shined 9 pairs of shoes and Terry shined 6 pairs, how much money did the boys earn?

Answer: 15 x (9 + 6) = N

N = 225¢ or $2.25

ITEM 1

Write the equation and name the answer.

Judy and Vicki sell lemonade at 10¢ a glass. If Judy sold 6 glasses, and Vicki sold 11 glasses, how much money did the girls earn?

Answer: 10 x (6 + 11) = N

N = 170¢ or $1.70

ITEM 2

Write the equation and name the answer.

Mr. Campanelli charges $1.75 for the most delicious pizza in the neighborhood. How much money did he make if he sold 325 pizzas on Friday evening and 500 on Sunday evening?

Answer: 1.25 x (325 +
+ 500) = N

N = $1,031.25

ITEM 3

Write the equation and name the answer.

Art sold hot dogs for 25¢ a piece. How much money did he make if he sold 130 hot dogs on Saturday and 60 on Sunday?

Answer: 25¢ x (130 + 60)
= N

N = 4750¢ or
$47.50

ITEM 4

Objective 212 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Inequalities

OBJECTIVE: Given a verbal problem involving time, the student will write an inequality to solve the problem.

SAMPLE ITEMS:

Write an inequality to solve the problem.

About what time is it now if three hours from now it must be just before 11:00 A.M.?

Answer: $n + 3 < 11$

Just before 8:00 A.M.

ITEM 1

Write an inequality to solve the problem.

About what time is it if four hours from now Randy's plane is scheduled to arrive in St. Louis just after 7:00 P.M.?

Answer: $n + 4 > 7$

Just after 3:00 P.M.

ITEM 2

Write an inequality to solve the problem.

About what time is it if four hours from now Marty's alarm is set to go off just before 6:00 A.M.?

Answer: $n + 4 < 6$

Just before 2:00 A.M.

ITEM 3

Write an inequality to solve the problem.

About what time is it if 45 minutes from now Betty's boyfriend will call just after 8:00 P.M.?

Answer: $n + 45 > 8$

Just after 7:15 P.M.

ITEM 4

Objective 213 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Application--Problem Solving

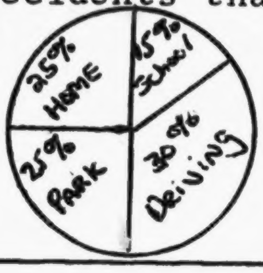
SUB-CATEGORY: Statistics

OBJECTIVE: Given a verbal problem and a circle graph, the student will solve the problem.

SAMPLE ITEMS:

Solve the problem using facts from the circle graph. Express as both a ratio and a decimal.

What is the total percent of accidents that occur at home and on school grounds?



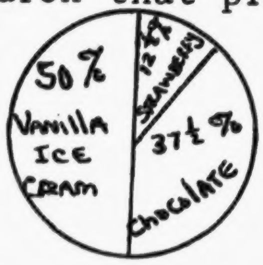
Answer: 25% + 15% = N

40%

ITEM 1

Solve the problem using facts from the circle graph. Express as both a ratio and a decimal.

What is the total percent of children that prefer strawberry and vanilla ice cream?



Answer: 50% + 12 1/2% = N

62 1/2%

ITEM 2

Objective 214 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Rate

OBJECTIVE: Given a word problem involving rate, the student will solve the problem.

SAMPLE ITEMS:

Solve the problem. If the bus travels at the rate of 60 miles per hour, how many hours will it take the bus to travel 450 miles? Answer: 7 1/2 hours ITEM 1	Solve the problem. If Debbie drives 50 miles per hour, how many hours will it take her to cover 525 miles? Answer: 10 1/2 hours ITEM 2
Solve the problem. If the airplane travels at 500 miles per hour, how many hours will it take to travel 1,040 miles? Answer: 2 2/25 hours ITEM 3	Solve the problem. If Jim's train travels at 90 miles per hour, how many hours will it take to cover 450 miles? Answer: 5 hours ITEM 4

Objective 215
Math

IOX Acceptability Rating: 1
Grade 5-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Word Problems Involving Two-Place Multiplication

OBJECTIVE: Given a word problem involving two-place multiplication, the student will solve the problem.

SAMPLE ITEMS:

Solve the problem:

There are 36 children in John's class. If each child pays $3.45 for a book, how much is that all together?

Answer:
```
$   3.45
    x 36
    2070
   1035
$ 124.20
```

ITEM 1

Solve the problem:

There are 26 boys in Louis' scout troop. If each boy gives $1.25 for the picnic on Sunday, how much money will they have all together?

Answer:
```
$  1.25
   x 26
    750
   250
$ 32.50
```

ITEM 2

Solve the problem:

There are 29 students in Miss Smith's class. If each student pays $1.50 to see a play at the Music Center, how much is that all together?

Answer:
```
$  1.50
   x 29
   1350
   300
$ 43.50
```

ITEM 3

Solve the problem:

There are 15 girls and boys in Phil's apartment building who paid $2.00 a piece to get group tickets to the baseball game. How much money is that all together?

Answer:
```
$  2.00
   x 15
   1000
   200
$ 30.00
```

ITEM 4

Objective 216

IOX Acceptability Rating: 1

Math

Grade 5 -6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Fractions

OBJECTIVE: Given a word problem involving fractional numbers, the student will solve the problem.

SAMPLE ITEMS:

Solve the problem. 2/3 of the children bring their lunches to school. 1/4 of the children buy their lunches. What fractional part of the children go home for lunch? Answer: 1/12 ITEM 1	Solve the problem. 1/2 of the children wanted vanilla ice cream; 1/6 of the children wanted strawberry ice cream. What fractional part of the children wanted chocolate ice cream? Answer: 1/3 ITEM 2
Solve the problem. 1/9 of the children at the party chose blue balloons; 3/4 of the children chose red balloons. What fractional part of the children chose yellow balloons? Answer: 35/36 ITEM 3	Solve the problem. If 1/8 of the women wore necklaces, and 2/5 wore bracelets, what fractional part of the women wore neither necklaces nor bracelets? Answer: 19/40 ITEM 4

Objective 217
Math
IOX Acceptability Rating: 1
Grade 5-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Decimal Fractions

OBJECTIVE: Given a word problem, the student will write the number sentence and name the answer as a decimal fraction.

SAMPLE ITEMS:

Write the number sentence and name the answer as a decimal fraction.

If the perimeter of a square is 34.4 feet, name the length of the sides of the square.

Answer: 34.4 ÷ 4 = N
Each side is 8.6 feet

ITEM 1

Write the number sentence and name the answer as a decimal fraction.

If Mr. Doe's garden is 11.5 ft. by 6.3 ft, name the area of the garden.

Answer: 11.5 x 6.3 = N
Area = 72.45 sq. ft.

ITEM 2

Write the number sentence and name the answer as a decimal fraction.

If Mary's Yard Good Store sold 400.6 yards of cloth on Monday, Tuesday, and Wednesday. How many yards were sold in all?

Answer: 400.6 x 3 = N
1201.8 yards

ITEM 3

Write the number sentence and name the answer as a decimal fraction.

If Maria bought 6 packages of binding tape 9.4 inches long. How many inches of binding tape did she have in all?

Answer: 9.4 x 6 = N
56.4 inches

ITEM 4

Objective 218 Math

IOX Acceptability Rating: 1 Grade 5-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Per Cents

OBJECTIVE: Given a verbal problem dealing with a discount, the student will translate it into a number sentence and solve.

SAMPLE ITEMS:

Translate the word problem into a number sentence and solve.

An airplane model that usually sells for $4.70 is reduced 10%. What is the amount of reduction? How much does the airplane model sell for after the reduction?

Answer:

($4.70) - (4.70 x 10%) = N

Amount of reduction is 47¢

Selling price is $4.23

ITEM 1

Translate the word problem into a number sentence and solve.

A portable radio that usually sells for $12.00 has been reduced 15%. What is the amount of reduction? How much does the radio sell for after the reduction?

Answer:

$12.00 - (12.00 x 15%) = N

Amount of reduction is $1.80

Selling price is $10.20

ITEM 2

Objective 219

IOX Acceptability Rating: 1

Math

Grade 5-6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Estimating

OBJECTIVE: Given a word problem, the student will estimate and solve the problem.

SAMPLE ITEMS:

Estimate and solve the problem.

If the total dinner cost of $24.50 is shared evenly among 7 people, what is the cost per person?

Answer: estimation: $3.00

$$\begin{array}{r} \$\ 3.50 \\ 7\,\overline{)\$24.50} \end{array}$$

ITEM 1

Estimate and solve the problem.

If the cost of $12.75 for a bouquet of flowers and candy for Mrs. Jones is shared evenly among her 5 children, what is the cost per person?

Answer: estimation: $3.00

$$\begin{array}{r} \$\ 2.55 \\ 5\,\overline{)\$12.75} \end{array}$$

ITEM 2

Estimate and solve the problem.

If the cost of the radio for the office is $29.94, and is shared evenly among 3 secretaries, what is the cost per person?

Answer: estimation: $10.00

$$\begin{array}{r} \$\ 9.98 \\ 3\,\overline{)\$29.94} \end{array}$$

ITEM 3

Estimate and solve the problem.

If the total amount of gas used on the trip cost $11.60, and it was shared evenly among 4 people, what was the cost per person?

Answer: estimation: $3.00

$$\begin{array}{r} \$\ 2.90 \\ 4\,\overline{)\$11.60} \end{array}$$

ITEM 4

Objective 220 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Problem Solving With Rate, Distance, Area Measurements

OBJECTIVE: Given a word problem involving rate, distance, or area measurements, the student will solve the problem.

SAMPLE ITEMS:

Solve the problem: Penny Petunia's garden was 500 feet long and 435 feet wide. What was the area? Answer: 217,000 sq. ft. ITEM 1	Solve the problem: Hot Rod Harry drove 249 miles in 3 hours. How many miles per hour did he average? Answer: 83 m.p.h. ITEM 2
Solve the problem: If Sybille drove 70 miles per hour for 6 1/2 hours, what distance did she cover? Answer: 455 miles ITEM 3	Solve the problem: If Dolly's playroom is 12 feet long and 11 feet wide, what is the area of the room? Answer: 132 square feet ITEM 4

Objective 221 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Application--Problem Solving

SUB-CATEGORY: Negative Integers

OBJECTIVE: Given a verbal problem involving negative integers, the student will solve the problem.

SAMPLE ITEMS:

NASA scientists are "counting down" to blast off. They hold if there is anything wrong. If there is a hold 37 minutes before blast-off and another at 30 minutes before blast-off, what is the difference in countdown time between these holds?

Answer: 7 minutes

ITEM 1

If it was 25° F below 0 in Alaska on Saturday and 15° F below 0 on Sunday, how many degrees difference was there between the two temperature?

Answer: 10°

ITEM 2

If Dick needed 10 postage stamps to put on his Christmas cards, and Jane needed 24, how many more stamps did Jane need than Dick?

Answer: 14 stamps

ITEM 3

Objective 222 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Mathematical Sentences, Order, Logic

SUB-CATEGORY: Patterns

OBJECTIVE: Given a set of numbers with missing members, the student will determine the pattern and complete the set.

SAMPLE ITEMS:

Name the missing numbers.

{1,2,4,8,a,b,c,128,d}

Answer: a=16, b=32, c=64, d=256

ITEM 1

Name the missing numbers.

{2,6,9,27,30,90,e, 279,f,g}

Answer: e=93, f=282, g=846

ITEM 2

Name the missing numbers.

{2,6,5,15,14,h,i,123,j}

Answer: h=42, i=41, j=122

ITEM 3

Name the missing numbers.

{4,8,7,11,10,k,l,m,16}

Answer: k=14, l=13, m=17

ITEM 4

Objective 223 — Math

IOX Acceptability Rating: 1 — Grade 4-6

MAJOR CATEGORY: Mathematical Sentences--Order, Logic

SUB-CATEGORY: Relationships

OBJECTIVE: Given a sentence, the student will tell in writing whether it is a true or a false sentence.

SAMPLE ITEMS:

Write a "T" if the sentence is true and a "F" if the sentence is false.

16 - 9 = (8 + 8) - 9

Answer: T

ITEM 1

Write a "T" if the sentence is true and a "F" if the sentence is false.

(3 + 2) + 7   8 + 9 + 3

Answer: F

ITEM 2

Write a "T" if the sentence is true and a "F" if the sentence is false.

36 - 9 = 15

Answer: F

ITEM 3

Write a "T" if the sentence is true and a "F" if the sentence is false.

5 + 7 + 9   9 + 5 + 7

Answer: F

ITEM 4

Objective 224 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Mathematical Sentences, Order, Logic

SUB-CATEGORY: Inequalities

OBJECTIVE: Given a number sentence involving inequality with an unknown, the student will name the unknown which makes the sentence true.

SAMPLE ITEMS:

Name the number that will make the statement true.

$18-x < 10$

Answer: 9, 10, ...18

ITEM 1

Name the number that will make the statement true.

$\frac{1}{4} + \frac{3}{8} > y$

Answer: $\frac{1}{2}$ or less

ITEM 2

Name the number that will make the statement true.

$3 + 9 > a$

Answer: 12 or less

ITEM 3

Name the number that will make the statement true.

$23 - 11 < b$

Answer: 12 or more

ITEM 4

Objective 225 Math

IOX Acceptability Rating: 1 Grade 4-6

MAJOR CATEGORY: Mathematical Sentences--Order, Logic

SUB-CATEGORY: Relationship Symbols

OBJECTIVE: Given a set of incomplete mathematical sentences, the student will write or to make the sentences true.

SAMPLE ITEMS:

Write < or > in the ☐ following sentence to make the sentence true.

$3 + 6 \square 7 + 15$

Answer:

ITEM 1

Write < or > in the ☐ following sentence to make the sentence true.

$24 + (9 - 9) \square (13 + 8) - 9$

Answer:

ITEM 2

Write < or > in the ☐ following sentence to make the sentence true.

$4 + (20 - 13) \square (10 + 1) - 6$

Answer:

ITEM 3

Write < or > in the ☐ following sentence to make the sentence true.

$36 + (13 - 3) \square (10 + 4) + 30$

Answer:

ITEM 4

Objective 226

IOX Acceptability Rating: 1

Math

Grade 4-6

MAJOR CATEGORY: Mathematical Sentences--Order, Logic

SUB-CATEGORY: Relationship Symbols

OBJECTIVE: Given a set of incomplete mathematical sentences, the student will write = or ≠ to make the sentences true.

SAMPLE ITEMS:

Write = or ≠ in each ☐ to make the sentence true.

5 + 7 + 9 ☐ 9 + 8 + 5

Answer: ≠

ITEM 1

Write = or ≠ in each ☐ to make the sentence true.

(3 + 2) + 5 ☐ 5 x 2

Answer: =

ITEM 2

Write = or ≠ in each ☐ to make the sentence true.

(4 + 3) + 1 ☐ 2 x 2 x 2

Answer: =

ITEM 3

Write = or ≠ in each ☐ to make the sentence true.

(5 + 3) + 2 ☐ 15 - 6

Answer: ≠

ITEM 4

Objective 227

IOX Acceptability Rating: 1

Math

Grade 4-6

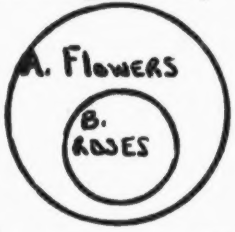
MAJOR CATEGORY: Mathematical Sentences--Order, Logic

SUB-CATEGORY: All, Some, Not

OBJECTIVE: Given a Venn diagram and an incomplete sentence, the student will qualify or negate the sentence using all, some, or not.

SAMPLE ITEMS:

Use the Venn diagram to complete the sentences using all, some, or not.



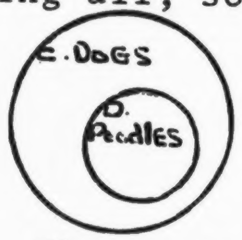
1. _____ roses are flowers.
2. _____ flowers are roses.

Answer: 1. all

2. not

ITEM 1

Use the Venn diagram to complete the sentences using all, some, or not.



1. There are _____ dogs that are not poodles.
2. _____ poodles are dogs.

Answer: 1. some

2. all

ITEM 2

Objective 228 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Mathematical Sentences, Order, Logic

SUB-CATEGORY: Statements, If Not - Then

OBJECTIVE: Given an incomplete if not - then sentence, the student will complete it.

SAMPLE ITEMS:

Complete the statement. If a whole number between 10 and 20 is not a prime number, then it is a ________ number. Answer: Composite ITEM 1	Complete the statement. If a number is not rational, then it is ________. Answer: Irrational ITEM 2
Complete the statement. If a whole number is not even, then it is ________. Answer: Odd ITEM 3	Complete the statement. If a whole number is not divisible by any other number except itself and 1, then it is a ________ number. Answer: Prime ITEM 4

Objective 229 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Mathematical Sentences--Order, Logic

SUB-CATEGORY: Diagramming Statements

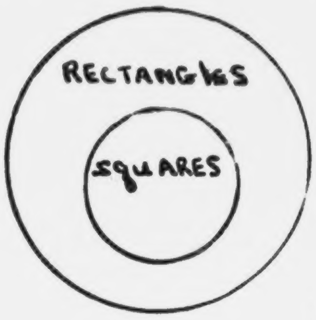
OBJECTIVE: Given a statement with one of the adjectives, all, some, or no, the student will diagram it.

SAMPLE ITEMS:

Diagram the statement.

All squares are rectangles.

Answer:

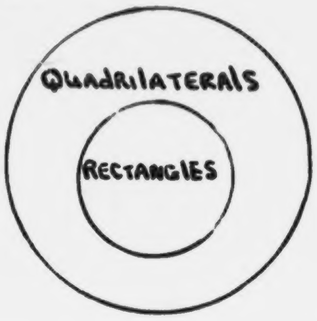

RECTANGLES
SQUARES

ITEM 1

Diagram the statement.

Some quadrilaterals are rectangles.

Answer:

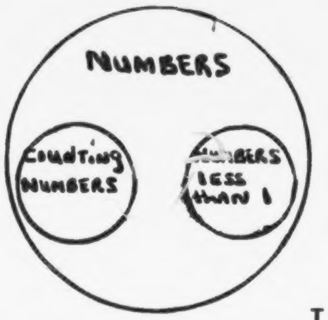

QUADRILATERALS
RECTANGLES

ITEM 2

Diagram the statement.

No counting numbers are less than 1.

Answer:

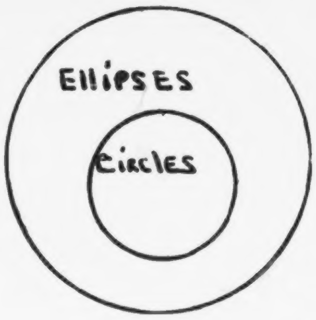

NUMBERS
COUNTING NUMBERS
NUMBERS LESS THAN 1

ITEM 3

Diagram the statement.

All circles are ellipses.

Answer:


ELLIPSES
CIRCLES

ITEM 4

Objective 230 Math

IOX Acceptability Rating: 1 Grade 6

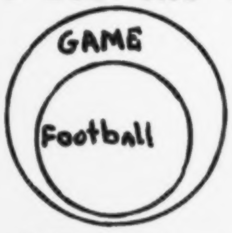
MAJOR CATEGORY: Mathematical Sentences--Order, Logic

SUB-CATEGORY: If-Then Statements

OBJECTIVE: Given a diagram with a set-subset relationship, the student will write a correct if-then statement for it.

SAMPLE ITEMS:

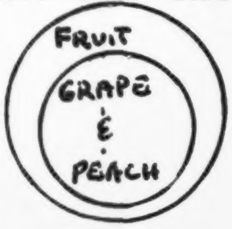
Write a correct if-then statement for the diagram.



Answer: If it is a football, then it is a game.

ITEM 1

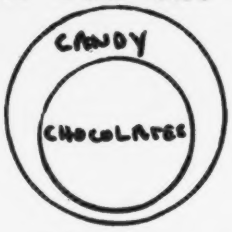
Write a correct if-then statement for the diagram.



Answer: If they are a grape and a peach, then they are fruits.

ITEM 2

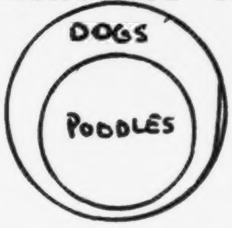
Write a correct if-then statement for the diagram.



Answer: If they are chocolates, then they are candy.

ITEM 3

Write a correct if-then statement for the diagram.



Answer: If it is a poodle, then it is a dog.

ITEM 4

Objective 231 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Mathematical Sentences, Order, Logic

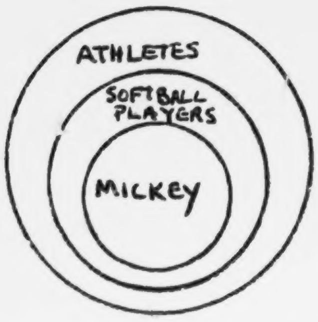
SUB-CATEGORY: Syllogisms

OBJECTIVE: Given a syllogism, the student will diagram it.

SAMPLE ITEM: Diagram this syllogism.

1. All softball players are athletes.
2. Mickey is a softball player.
3. Mickey is an athlete.

Answer:



ITEM 1

Objective 232 Math

IOX Acceptability Rating: 1 Grade 6

MAJOR CATEGORY: Mathematical Sentences--Order, Logic

SUB-CATEGORY: True Statements

OBJECTIVE: Given a mathematical sentence, the student will name a number to make the sentences true.

SAMPLE ITEMS:

Name a number to make the sentence true.

$\div 12 = 19$

Answer: 228

ITEM 1

Name a number to make the sentence true.

$- 29 = 87$

Answer: 116

ITEM 2

Name a number to make the sentence true.

$- 3^3 = 5$

Answer: 32

ITEM 3

Name a number to make the sentence true.

$5^2 + \quad = 4^3$

Answer: 39

ITEM 4

Objective 233

IOX Acceptability Rating: 1

Math

Grade 6

MAJOR CATEGORY: Mathematical Sentences--Order, Logic

SUB-CATEGORY: Problem Solving--Translation

OBJECTIVE: Given a word problem, the student will translate it into an open mathematical sentence.

SAMPLE ITEMS:

Translate this word problem into an open mathematical sentence and then solve:

Jet planes often fly higher than 32,000 feet. How much more than 5 miles is 32,000 feet?

Answer: (5 x 5280) + N = 32,000
N = 5,600

ITEM 1

Translate this word problem into an open mathematical sentence and then solve:

Paul spent 5 hours working on his special current event report, and Billy spent 3 hours on his. How many more minutes did paul spend on his?

Answer: (5 x 60) - 3(60) = N
N = 120

ITEM 2

Translate this word problem into an open mathematical sentence and then solve:

Ken's new fishing line can reach a depth of 75 feet. How many more feet of line would he need to reach a depth of half a mile?

Answer: (1/2 x 5280) - 75 = N
2565 = N

ITEM 3

INSTRUCTIONAL OBJECTIVES EXCHANGE

A Project of the Center
for the Study of Evaluation

UCLA Graduate School of Education
Los Angeles, California